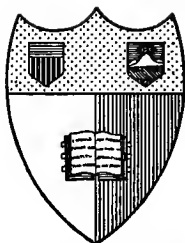


GERMAN AFRICAN EMPIRE

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LUDERITZBUCHT, SOUTH WEST AFRICA.

THE GERMAN AFRICAN EMPIRE

BY

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A. F. CALVERT'S MAP OF AFRICA, SHOWING THE
LATE GERMAN COLONIES.

PREFACE.

IT has been contended that while Germany had a perfect right to hate England if it pleased her to do so, she had no justification for her distrust of British intentions with regard to herself. This is a plea that cannot be maintained. German diplomacy for many years has been inspired by the necessity of securing the neutrality of this country in the event of Germany's embroiling herself in a war with any other European Power or Powers, and of keeping England quiescent until the time arrived when the German Navy was to wrestle with the British Navy for the supremacy of the seas, and German Expeditionary Forces were to operate with her colonial soldiers in seizing British possessions in various parts of the globe. It was not until Germany commenced to build up a Colonial Empire that she came into imperial and commercial rivalry with ourselves, and she has never felt that she could trust us to play into her hands when the hour arrived for her to reveal her designs upon the dictatorship of the world. But, a year and-a-half ago, her blundering statesmen convinced themselves that Britain's hands were so full of imminent civil war in Ireland, rebellion in India, treachery in South Africa, and dissatisfaction in most of her overseas dominions, that she must see the insanity of allowing herself to be involved in a Continental war, and would suffer treaties to which she had set her seal to be trampled under foot rather than accept the arbitrament of arms.

Britain was to be coaxed, fooled and, if necessary, threatened into a passive attitude. She was to have no part in the war begun in 1914; her turn was to come in the years following. Germany could not wholly trust us to do the wrong thing; her hate came with the realisation that her distrust was well founded. England has ever been prepared to fight when the object in view has been the prevention of any one Power from dominating Europe. She fought Spain to secure that end; she fought Russia, and subsequently overthrew Napoleon in order that the European States might preserve their nationalities and their independence. All Europe, save Germany alone, knew that England would fight again in pursuance of the diplomatic policy that she has persevered in since the time of Henry VIII., and now Germany knows it also.

Colonial and commercial rivalry has been the foundation of German distrust and hatred of Britain. In Europe, the English had nothing to lose or gain territorially by a war with Germany, but in Africa Germany had much to gain and not a little to lose. And the methods by which she acquired such assets as German East and South-West Africa, the Cameroons and Togoland—which she was compelled to risk by the declaration of hostilities against France in August, 1914, and Britain's declaration against Germany a few days later—will always be regarded as a standard example of German knavery and British cupidity. Since the time of those African acquisitions, the Teuton has practised every infamy

by which a nation can divorce itself from civilisation, but thirty years ago the German people had still some claim to humanity and common honesty, and England had no reason to forecast her ultimate appearance in International drama as the wild beast of Europe.

Once bit, twice shy, is accepted as a rough formula of English diplomatic methods, but in all the preliminaries which prepared the way for the proclamations of Germany's territorial annexations in Africa, the British Foreign and Colonial Offices were four times bitten without betraying a single symptom of their proverbial shyness. In the whole business, the German Imperial Government did more than lay the foundations of her transitory Colonial Empire: it embarked upon a national course of duplicity, lying, bad faith, and general roguery which culminated in the violation of Belgium, and thereby built for itself a monument of dishonour which will endure until the end of the world. And the monument of blindness and perversity erected by Mr. Gladstone's administrations in their relations with Bismarck in 1883 and 1884 will not be less enduring.

There was a time when Germany intended to pursue her destiny as a consolidated State, and desired no geographical or political enlargement that could not be accomplished by the expansion of her European boundaries. England appears to have fallen into the error of imagining that the aspirations of nations are unchanging, and that an Imperial

policy once embraced must be persevered with for ever. When Frederick the Great declared that all far-off acquisitions were a burden to the State, the idea of a German Colonial Empire was considered to be chimerical and absurd. When, in 1871, Bismarck asserted that Germany did not want colonies, the Chancellor was honestly opposed to the aspirations for overseas possessions that were germinating in a section of his fellow-countrymen. A decade later Bismarck himself was listening to the lures of the German Colonisation Society, which had been formed for the purpose of nurturing these aspirations and of casting about for unannexed territory into which they could carry the glad message of that *kultur* which, for the next thirty years, was to keep Europe in a state of apprehension and suspense.

Bismarck's opinions had undergone a change since William I. crowned himself German Emperor at Versailles, but Lords Granville and Derby failed to realise the transformation. The German Chancellor remained as contemptuous as ever of the benevolent and characteristically British genius for colonisation in the best interests of the colonists and the natives, but he had become converted to schemes of trade colonies, which embraced the formation of little German outpost strongholds that could be exploited in the interests of Germany's commerce. In short, he saw in Africa what the Spaniards, 300 years before, had seen in South America, and his conception of the whole duty and science of colonisation never developed beyond the medieval business

of confiscation and slaughter. But having assimilated the colonial idea, and given himself to the consideration of the practical application of the scheme, he discovered that Africa was the only Continent which had not been partitioned already and distributed among the older European nations. Even the territories not actually annexed were recognised as being within the "spheres of influence" of one or other of the Powers, and in the case of most of the unallotted region, the Power exercising such influences was England.

At the moment in which Bismarck and his confrères realised that fact, the hatred, jealousy and desire of Germany to despoil England was born. Von Treitschke commenced to preach the destruction of England's naval supremacy as the only means by which his countrymen could prepare the way for the creation of a Greater Germany in Africa—and elsewhere. Von Bernhardi, a firebrand of later growth, proclaimed that "The German nation, from the standpoint of its importance to civilisation, is entitled not only to demand a place in the sun, but to aspire to an adequate share in the sovereignty of the world far beyond the limits of its present sphere of influence." By virtue of its own merit, and in the sacred interests of civilisation, Germany felt itself justly entitled and honourably impelled to acquire new territories, and no unacquired territories existed. It was evident to Treitschke that the only tenable plan was to crush England and construct Greater Germany on the ruins. But Bismarck felt

that the time was not ripe for war with Britain and the wresting from her of her overseas dominions. It was necessary, as an alternative, to intrigue for a footing in the unannexed regions, and having established a proprietorial claim, to follow it with an act of possession, and debate the rights of the claim afterwards to the accompaniment of "a roll of the drums." It was an essentially Bismarckian method, and one that was perfectly practicable in his hands. The process was simple and, in the face of the policy of masterly inaction displayed in Downing Street, effective. Merchants and traders were first instructed to establish themselves in the desired areas. This step was followed by the issue of an intimation that the private properties of these merchant-emissaries would be adequately protected. A little later a gunboat was despatched to confirm the genuineness of this guarantee, and the unfurling of the German flag in the several protectorates followed automatically.

Prior to 1883 the English Colonial Office was warned that Germany had acquisitive designs upon South-West Africa, and it was asked that British protection should be extended to Damaraland and Namaqualand in accordance with the expressed desire of the natives. There was some slight uneasiness in Downing Street, but it was speedily allayed by Bismarck's assurance that Germany had no intention of establishing Crown colonies or assuming a protectorate over that territory which, for the following three decades, was to be known as German South-West Africa. This instance of diplomatic

sharp practice exasperated the Cape Government, and even perturbed the equanimity of Lord Granville, who, however, failed to profit by the experience. The tribal chiefs of Togoland and the native kings of Duala, in the Cameroons, had repeatedly petitioned the British Government to take them under its protection, and the Cabinet were considering the advisability of acceding to these requests when the obvious, but unexpected, happened. Immediately after the German occupation of Luderitzbucht, Dr. Nachtigal was sent by Bismarck to report, in his unsuspecting capacity of Trade Commissioner, upon the progress of German commerce in West Africa. Dr. Nachtigal so far exceeded his purely departmental mission as to formally annex the 33,700 square miles of Togoland in the name of Germany. Mr. Hewitt, the British Consul, was, at this time, on his way to Duala to execute the Government's leisurely decision to grant the natives of the Cameroons the longed-for protection of the British flag, and he arrived to find that the German Trade Commissioner had forestalled him. The Cameroons, with its 191,000 square miles—which was increased to 291,000 square miles by the concession of French Equatorial Africa under the Moroccan Settlement of 1911—had been added to the German Colonial Empire. Lord Granville fatuously reproached Bismarck for not having revealed the real nature of the errand upon which Dr. Nachtigal had been despatched to West Africa, but the master of William I. was too busy arranging a coup elsewhere to heed the protest.

Since 1841, Britain had been supreme in the Zanzibari regions of Eastern Africa, and in 1884, thanks to the ceaseless efforts of her intrepid explorers, her sphere of influence in this quarter of the Continent was expanding in every direction. But Britain had made no definite annexation of the tracts of no-man's-land that had been traversed and roughly opened up by Baker, Speke, Burton, Grant, Stanley, and the rest. It was British so far as self-sacrificing effort and knowledge, and the tracings of solitary expeditions through its unmapped spaces could make it so, but in nothing else. It was not British in name, because the publication of its formal inclusion within the Empire had been denied it ; the territory was apportioned but not attached ; we had paid the price without taking delivery of the goods. This, if I may be allowed to employ so homely a simile, will roughly explain the situation at the commencement of 1885, when the German lust of African territory was whetted by her wily acquisitions in the south-west and west of the Continent. German traders had been established at Zanzibar in 1874 ; ten years later Dr. Carl Peters, backed by influential interests in Berlin, had visited the interior and obtained various concessions from the native chiefs on behalf of the newly-formed German East Africa Company. This Company, with the assistance of an army of ex-British native soldiers and Zulus, and with the co-operation of the British fleet, enforced their claims to the concessions granted under the treaties, but it was not until later, when

the Reichstag voted ten and a half million marks for the maintenance and development of these newly-acquired territories, that England learnt that the colony of German East Africa, with an area of 384,000 square miles, had become a Protectorate of Germany.

In something less than a year Germany had intrigued, lied and tricked Britain into acknowledging her sovereignty over 100,000,000 square miles of Africa, or an area about nine times as large as the whole of the United Kingdom, with a total native population of nearly 14,000,000. When war was declared last August, the white population of Germanic Africa was only 16,500 persons, but the colonies were equipped with over 300 post and telegraph offices, and their exports had reached a total of over four millions sterling. Roughly speaking, the Germans have sunk in these colonies about £100,000,000.

When Germany, having experimented with her policy of acquiring territory on the principle of "win, tie or wrangle," and developing her acquisitions on a plan peculiarly and unpleasantly her own, began to formulate a scheme for appropriating colonies ready made and in working order, German publicists were immediately forthcoming to prove that in so doing she would only be fulfilling her mission to benefit mankind and "make the world better." The late Professor Cramb, who applied the phrase "epoch-making" to Bernhardt's book, sought to prove to us in his lectures on "Germany and England," that

this British conception of colonisation is utterly wrong, and the German system is entirely right. He declared that our conspicuous, ignoble and complete failure to govern India, our inevitable failure to hold Egypt, and our insecure hold upon our Colonial Dominions could be traced to the fact that the English have lost, if they ever possessed them, "the qualities of creative genius in religion, the valour in arms of a military caste, and the pride of birth of the rajah," and have come to be "a timorous, craven nation, trusting to its fleet." It is true that we have no compulsory military service as in Germany; we do not impose such obligation on our colonists as the Germans do; we do not even insist by law upon our native subjects acquiring our language. But our system must be judged by results, and these would scarcely seem to warrant us in changing our methods. In Alsace and Lorraine, while the subject population of the Kaiser were weeping tears of joy at the prospect of speedy liberation, the Togolandese welcomed the entrance of British troops into Lome with enthusiasm. The warlike chiefs of Northern South-West Africa laugh at the idea that they are vassals of the Emperor; the cowed and beaten natives of East Africa are eager to own allegiance of the incoming English rule; and while the soldiers of the seven hundred chiefs of the Indian Tributary States, upon whom we have "failed to impress our dominion," are making history in French Flanders, the Colonies, which "shiver with impatience under the last slight remnant of our yoke," are fighting to maintain the glory of the

British flag in Egypt and Turkey, in Polynesia and in East and West and South-West Africa.

Lord Haldane was hazed by the glamour of the German Emperor's friendship, and was caught by the lying cant which German professors published about Teutonic aims and benevolent aspirations. The ex-Secretary of State for War, who deplored Germany's "one particular piece of ill-luck—the misfortune of having been born a hundred years late in the world's history"—and sympathised with her policy of colonial expansion, was flattered by her study and application of English methods of colonial development, and observed "that she was penetrating everywhere to the profit of mankind." Lord Haldane might otherwise have known, as Herr Dernburg has since explained, that "Germany's view is that her growing population must get extra territory capable of population by whites," and while he may still regard Herr Ballin as an interesting personality, he can no longer deny that in pursuance of his life's purpose, "to make the world better," the Kaiser intended to find that extra territory in the Cape Colony, British East Africa, the Belgian Congo, and Morocco. The colonies of Germany, of England, France and Belgium form part of the stakes for which the belligerents are now fighting; and in a war of aggression and acquisition, in which Germany designed to work her will upon the Allies, it is not only the right but the duty of England and France to defend their own possessions from seizure and to confiscate those of the common enemy.

Herr Dernburg, until recently the Emperor's mouthpiece in the United States, declared that one of the points his master will insist upon before he will consent to a Peace, is the return of all Germany's colonies to Germany. Dr. Solf, the German Colonial Secretary, has vouched for his Government's pacific intentions with regard to the colonial possessions of the Allies, but before revealing the means by which the German Colonial Office prepared to preserve the peace in Africa, it is interesting to recall the criticism of German designs uttered by a far-seeing Englishman soon after the flag of the Fatherland was unfurled over Luderitzbucht. Thirty years ago, in *The Fortnightly Review*, the Rev. William Greswell warned this country that the annexation of South-West Africa by Germany was no sporadic effort, no random impulse, but part of a plan, and while the writer did not attempt to fathom the depth of the intrigue, he was convinced that "German colonisation in South Africa is no myth or dream, but a series of ventures and projects thrust forward by keen business men, backed by official support, and directed by a master hand." Behind the protection of Herr Luderitz he detected other projects. "The face value of Namaqualand and Damaraland was worth little; the country was a sandy and most unattractive waste, waterless and barren; the natives (as the Germans discovered later on) hard to subdue. But the real value lay in the proximity of the region to the Boer States, disaffected to Great

Britain. The land was not taken for *bona fide* colonisation, only as a *point d'appui*."

The truth of this prediction has since been clearly seen in the light of recent events, and the difficulty of the task with which England is confronted in Africa has been made greater by the considerable force which the Government of East Africa raised—ostensibly for the maintenance of peace among its native subjects—and by the larger force of well-trained and equipped white soldiers which were under arms in South-West Africa, where inter-tribal warfare was practically unknown, and the danger of a native uprising was *nil*. Dr. Solf issued on 7th December, 1914, a belated official statement in which, after declaring that the Anglo-German war in no wise affects South Africa, and denying that Germany ever had any intention of occupying, either permanently or temporarily, the territory of the South African Union, he announced that Germany is prepared "to cease hostilities which the South African Government forced on her, provided that the Union Government also refrains from hostile action against German territory, and evacuates regions already occupied by Union forces." The impertinence of this proposal is made more amazing by the existence of abundant evidence which proves that for many years Germany in South-West Africa, as in Europe, has been stealthily, methodically, relentlessly preparing for war. The railways built, and those that were under construction at the outbreak of hostilities, are all strategic railways, made on what is still called

the Cape gauge, and leading out to the Union border. Windhoek is the capital of the colony, and is described as its chief military station. But at the artillery depot at Windhoek was collected only a worthless medley of damaged gun-carriages and iron hoops, and some bales of locally collected hay, while at Keetmanshoop—situated near the British border—was a great arsenal furnished with guns and gun-carriages, ambulances and convoy vehicles, thousands of military rifles, of bandoliers and soldiers' kits, and huge stores of ammunition and compressed fodder. And Keetmanshoop, the most important town in the country, some 150 miles from the Cape territory, is hundreds of miles further than Windhoek from Amboland, against which the concentration of the German troops was ostensibly directed.

Collateral security against the imaginary evil intentions of the unarmed, unwarlike and unoffending Ovambos, was provided by Germany in the shape of a force of ten thousand trained German soldiers, fully equipped with arms, ammunition, stores and military supplies sufficient to last the army for six years. This army, with its supplies, was distant over 1,000 English miles from Amboland, while five thousand troops and two years' stores were concentrated within 150 miles of the Union border. It will be gathered from these few indisputable figures that Germany had been preparing to make trouble for the British in this part of the world on a thoroughly organized plan, and her only misfortune, so far as German ambitions are concerned, was that the Kaiser

embarked upon his scheme of world-conquest a year or two before the authorities at Windhoek had completed their railway system and military preparations.

With these facts before the world, the justice of the action of the Allies in stripping Germany of her colonial empire will not be challenged by anybody outside Berlin and Vienna. How we became possessed of our own overseas dominions is not pertinent to the question at issue, although "the most common complaint in the German Press against the British," Mr. Tilby shrewdly observes in *The Nineteenth Century* (November, 1914), "apart from the monotonous charge of treachery because we kept our word to Belgium, appears to be that we are 'stealers of colonies.' As the Germans, on their Chancellor's own admission, had an eye to the French colonies, we need not take the charge much to heart; it is our way of making war, and on the whole we prefer it to the German way of destroying cities and cathedrals, and outraging women and children. *De gustibus non est disputandum.*" The Rev. Wm. Greswell on this phase of the subject says: "It may be perfectly true that British colonies have been won by arms from savage possessors, especially in Africa, where Zululand was rescued from the barbarities of Cetewayo, Egypt from the Mahdi, Kaffraria from Kreli and Sandili; but the aftermath of British colonisation is worth recommending to the consideration of our German critics. We replace savagery by civilisation; the mission school is planted in the unholy groves of

the heathen ; the slave market of Zanzibar is replaced with a Christian Cathedral."

It may, of course, be urged on behalf of the Germans that they also colonise with pastors and mission-teachers, and that even in South-West Africa they had reared churches in the unholy groves of the heathen, but as Mr. Evans Lewin, the Librarian of the Royal Colonial Institute, points out in an article in *The Nineteenth Century*, their national colonial policy in this region was marked by all the defects of the German temperament. "At the very outset of her enterprises," he writes, "the Colonial Party's official organ in Africa declared that 'Germany had nothing to learn from England or any other colonising nation, having a method of handling social problems peculiar to the German spirit.' So far as South-West Africa is concerned, the arrogance of the 'German spirit' has been specially in evidence. As Professor Bonn, of Munich University, stated in an address before the Royal Colonial Institute (January 13th, 1914), 'We have had native risings and extremely silly European settlement schemes. . . . Apart from South-West Africa, where we solved the native problem by smashing tribal life and by creating a scarcity of labour, we are only just now beginning to understand native administration.' Germany has from the first stood for scientific methods in colonisation, and with true German arrogance she has applied fixed rules to flexible problems. Such success as she has had—and in many directions this success must be freely admitted—has

been neutralised by certain things that have tended to throw ridicule upon the efforts of her scientists and social reformers to impose by the aid of the military caste rigid rules and inflexible regulations upon the natives. The complex military and administrative machinery of the Fatherland has been little suited to the soil of Africa, and the scientific methods of dragooning the natives into a dull comprehension of the meaning of German *kultur* have cast discredit upon the excellent work that German administrators have performed in other directions. Germany had indeed much to learn from England, but she was too proud and too imbued with the consciousness of her own superior merit to stoop to Anglo-Saxon levels."

The fact has, indeed, been revealed in Germany's thirty-year effort in Colonial-empire building that the Germans have no genius for the high task of colonisation. They have experimented with their policy of "pipeclay, red-tape and finance" in Africa, and the native races, the land and the progress of the work of the world have suffered from their intrusion. As the High Commissioner for South Africa has admitted, it would be merely childish to blind our eyes to the fact that Germany has accomplished a great deal in Africa, but at the same time Germany has never really colonised at all, either in Africa or anywhere else. In order to colonise it is necessary to possess some sort of perception of the rights of humanity, and Germany has invariably committed the fatal error of misjudging humanity altogether. The lessons which must be

mastered before a nation can control and govern a subject race she has systematically refused to learn, until her violations of treaties and her brutal treatment of the natives, compelled the Hon. W. P. Schreiner to the conclusion that it would never be possible again for Germany and Britain to march side by side in the work of colonisation in Africa.

This misconception, on the part of German administrators, of the first principles of successful colonisation, is as complete as their misunderstanding of the nature of our Colonial Empire—a misunderstanding which is the more surprising, as Sir Francis Piggott explains, “because we have never made any secret of how the links were forged which bind the Empire together and the Empire to the Mother Country. They were at liberty to inquire, they would have had most truthful answers; they were free to examine for themselves; more than that, the House of our Fathers has no door to keep open or shut, and they, as all others, might walk in and, taking up their habitation, test our theories on the spot, observing our methods, and drawing their own conclusions. How freely the Kaiser’s subjects availed themselves of this liberty, how we welcomed them, even though it became sometimes our own hindrance, how we made both hearth-room and heart-room for them, they seem somewhat to have forgotten. Yet in spite of it all they have misunderstood what was so very plain, and the hopelessness of the blunder which has resulted from the misunderstanding has been ruthlessly demonstrated

by the hard facts as the world knows them to-day."

The problem of Colonial Government as Britain understands it, and as Sir Francis Piggott further observes, "is to keep the bonds of allegiance, which are practical as well as sentimental, taut and true. We believe that it can only be done by fostering the spirit of independence, so that the colonies may be not mere offshoots of the home country, but component parts of the Empire; that every colony should feel that it is a nation in embryo, capable if it will, or at least endeavouring to attain to that capacity of declaring its independence if the Mother Country neglect it or treat it improperly. Such success as we have attained is by the fearless recognition of this principle; and we foster it by self-reliance, by granting as much official and administrative independence as each is capable of exercising."

In the matter of the annexation of Germany's African possessions, Mr. Tilby believes the ordinary Englishman will take a plain, common-sense view. "He does not believe in dividing the bear's skin before the bear is caught," he says, "but, seeing the bear's tail and the tips of his ears have been secured, there is no valid reason against adding them to that strange but serviceable patchwork which is called the British Empire. If they do not fit, they can easily be made to fit. And I believe our plain man will think that, when peace comes, any indemnity which Germany can be made to pay should go to France and Belgium, the countries which have suffered most by the war; and that our part of the business will have

justified its trouble and expense—I say nothing of the obligations of national honour—if it gets rid for our time of the intolerable competition of the German fleet and secures us that form of indemnity which has become traditional after a successful war, the overseas possessions of our opponent.”

So far from there existing any doubt upon the subject of our right or intention to deprive Germany of South-West Africa, together with her other colonies, the question of the extent of the spoliation to which the Union will subject the huge concession corporations—the recipients of colossal grants and the mysterious possessors of mammoth rights—is already being discussed. But the consideration of these and mightier matters of policy may be postponed until the fitting hour for such discussion is reached. That the Union will have to recoup herself the cost of conquering South-West Africa will be understood, but whether she will favour any territorial sub-division of the new colony is a matter for surmise. Sir Harry H. Johnson, in the course of an illuminating address delivered in February last before the Geographical Society, threw out the suggestion that while the southern half of the new possession (including Swakopmund and Walfisch Bay) should pass to the Union of South Africa, the northern half might profitably be governed by the administration of the British South Africa Company on the same lines as Barotseland. He pointed out that Rhodesia at present has no outlet to the sea, and that such an arrangement would, when wealth

comes to the region of South Central Africa, give to Rhodesia a port on the Atlantic much nearer to England than Beira or Cape Town. It was a proposition that was evidently as unexpected as it was fascinating, but it inspired the South African High Commissioner to congratulate the lecturer upon the possession of the highest powers of imagination combined with a fine poetic fancy. The exhibition of Sir Harry Johnson's map of South Africa after the war, with the word Rhodesia writ large along the northern part of South-West Africa, suggested to him such questions as, "What became of Bechuana-land, of Basutoland and Swaziland, and of the Union which he had the honour to represent?" Probably Sir Harry Johnson will have his replies to all these interrogatories, but at the moment it is less instructive to conjecture the future administration of the conquered colony than to consider which other of Germany's dominions will come under British rule.

Whatever may be the national destiny in store for Togoland and the Cameroons, the German East and South-West African Protectorates will, in future, be British, and while the economic progress of all Germany's disappearing colonial possessions will be watched with general interest, these two colonies in particular are of chiefest concern to England. With regard to the Cameroons and Togoland, this only is certain, that they will eventually pass within the permanent jurisdiction of one or other of the Allies, but under whose flag they are to be ruled it is yet too early to say. "In the interests of British

commerce," says the *African World* of February 6th, "we may indulge the hope, even at this early stage, that whoever possesses Togoland and the Cameroons, there shall be no differential barriers, in the form of a high tariff, set up. Our gallant Allies will surely recognise and appreciate that it would be hard on our merchants, who, it must be acknowledged, received from German colonies reciprocal trading advantages to those given by British colonies—we say it would be hard to find these advantages and facilities disappear through measures designed to give undue preference to French traders. A fair field and open to all—just as the French firms have always had under English administrations—that is what we urge and advocate. We are sure that no offence will be felt at this frank statement on the situation. On the contrary, we hope it may help to a more cordial interchange of business relations between French and British colonies than existed previous to the war."

The absurd statement that German East and South-West Africa will be of no material value to the Empire is contradicted by a study of the natural resources of those territories, and their annexation will not only round off British possessions in Africa, but, as Mr. A. Wyatt Tilby shows, will solve two pressing local problems: (1) It will provide the Botha Government, in Namaqualand and Damaraland, with more land for the "bijwohners," or poor white class, and if an energetic public works policy is introduced, the poor whites and a more substantial class of Boer farmers should find their homes in the new south-

western province of the Union. (2) It will provide in German East Africa a much-needed port for the people of Northern Rhodesia by means of a railway across the new province, and, incidentally, will make feasible the all-British Cape-Cairo line.

But apart from the substantial political value of these territories, their material and potential worth are both of the first importance. The inaccuracy of the popular impression that South-West Africa is a desert—"a sandy and most unattractive waste, waterless and barren"—will, I hope, be corrected by the perusal of the following pages. In this addition to the Union, we shall possess a country of considerable resources and even greater potentialities, which the Germans neglected in their determination to develop its strategic importance as an asset in their scheme of Empire making. They invited German colonists from the Fatherland to exploit the agricultural and grazing riches of the Protectorate, and immediately conscripted into the military service every colonial subject of the Emperor who was fit to bear arms. They recognised that the territory was capable of supporting as large a mining population as could be enticed into it, and as soon as the diamond fields gave promise of substantial profits, they invented a system of quick returns—for the relief of the Imperial Exchequer and the financing of local military preparations. Dr. Solf, who visited the colony in 1912, declared that its mineral deposits were capable of immense development, while the prospects before its pastoral and agricultural in-

dustries were of the brightest, and he averred that he brought away with him the conviction that South-West Africa "was worth every ounce of German sweat and industry that could be put into it."

And if in East Africa, as in her other African territories, Germany has colonised with her customary bureaucratic lack of sympathy and skill, she has laid out the colony regardless of expense, and experimented with Teutonic thoroughness with the agricultural and productive resources of the colony. That she has not grasped the value of the potentialities of the region, or developed the country to its greatest advantage to either the settlers or the natives, is to be attributed to her boasted system. But the facilities which the British will bring to the development of the Protectorate will be favoured by the fewness of the Germans who have settled there. The number of colonists will be rapidly increased when the countless vexatious regulations have been abolished, and the colony, released from the benumbing bonds of German officialdom, will speedily be self-supporting.

The Cameroons and Togoland may be described as the most forward and the most backward of Germany's African acquisitions. Annexed by craft and its area expanded by bluff, the Protectorate of the Cameroons is a colony upon which the Germans have expended much money with comparatively

insignificant returns. Yet they are defending their unprofitable possession with great stubbornness and, as it was one of the first jewels to be set in the German colonial diadem, it is destined to be one of the last to be wrested from her. Togoland, the smallest but the most prosperous of the German colonies, was regarded with peculiar pride and satisfaction by the Government Colonial Office, which will soon find its occupation gone and its retention of Dr. Solf's services an expensive superfluity.

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WINDHOEK, SOUTH WEST AFRICA.

SOUTH-WEST AFRICA

(1884—1914)

INTRODUCTORY

FROM very early times the German has proved himself to be a good colonist—law-abiding, industrious and thrifty. His success as a settler and trader in the overseas dominions of other nations must have inspired Bismarck and his advisers with the belief that because the German was a good colonist he would also be an ideal coloniser, and in the early 'Eighties he set about acquiring territories in East, West and South-West Africa, and experimenting in the work of colonisation on a large scale. Germany came late into the field of colonial empire: Africa had already been largely appropriated by other nations, and in edging herself in she ran the risk of edging other powers out. By reason of the apathy and short-sightedness of British statesmanship, she planted herself in South-West Africa in 1884, when she sent her warships to patrol the coast-line of Namaqualand and Damaraland, and proclaimed her Protectorate over the 322,450 square

miles of country which is bounded on the north by Portuguese West Africa, on the east by Bechuanaland, and on the south by Cape Colony. This is the territory which for the following thirty years was to be known as German South-West Africa.

This incursion on the part of the German Government was as unexpected as it was undesirable. In 1883 a Bremen merchant, named Franz Adolf E. Luderitz, landed in the bay (Luderitzbucht) which bears his name, and acquired from the native chief an extensive tract of land in exchange for a few old muskets and a cash payment of 2,000 marks. Namaqualand and the neighbouring province of Damaraland were at that time, and had been for generations, under the unofficial protection of the British, and were regarded as the annexe of Cape Colony. Acts of authority had been occasionally exercised in these regions, and in 1874 the Damaras had made representations to the Cape, praying to be formally taken under the Colonial protection. Mr. W. C. Palgrave, the Commissioner appointed to confer with the chiefs, reported favourably upon the project, and Sir Bartle Frere, the prescient Governor of Cape Colony, urged upon the authorities in Downing Street the desirability of extending a British Protectorate from the Orange River northward to the Portuguese territory in Angola. British policy at that period was parochial rather than Imperial, and this scheme of colonial expansion was discouraged by the Colonial Office. Beyond declaring the port at Walfisch Bay British, nothing was

done. Even when the German Chancellor made inquiries as to Great Britain's intentions with regard to these countries, there was so much unfortunate delay in the Colonial Secretary's communications with the Cape Government, that Bismarck decided to adopt bold and immediate measures, and on April 24th, 1884, he despatched to the German Consul at Cape Town the following telegraphic announcement of Germany's entrance into world politics as a Colonial Power :—

“According to a communication from Herr Luderitz, the British Colonial officials doubt whether his acquisitions north of the Orange River can claim German protection. You will declare officially that he and his settlement are under the protection of the Empire.”

This challenge was immediately followed by the Cape Government's declaration of her eager willingness to annex the debatable territory, but Germany had followed her telegram with battleships and flags, and the colony was ceremoniously enrolled as a German province. “It was a vexatious incident,” we read in Bryden's *History of South Africa*, “the more vexatious in that, but for the culpable weakness and *laches* of the Colonial Office, it never ought to have been possible. It destroyed the symmetry of a South Africa which in future years, if not entirely British from the Cape to the Zambesi, at any rate bade fair to become a great confederation of States and Colonies under the protection of the British flag. And it gave to Germany rights in

territory marching with British Colonies, which may in future, when England has her hands full in other parts of the world, lead to unpleasant or unexpected results. The Imperial Government protested against the German annexation, but Prince Bismarck had pretty accurately taken the measure of Mr. Gladstone and his Colonial Secretary, and was not to be moved from one of the first serious attempts at German Colonial expansion. It was an unfriendly act, carried out in an unpleasant manner, and the British Colonists in South Africa are not soon likely to allow it to pass out of remembrance. The boundaries of the German Protectorate in South-West Africa, as agreed upon by the two Governments, are, upon the north and south, the Cunene and the Orange Rivers ; upon the east, the 20th degree of longitude as far as the 22nd parallel of south latitude. North of that latitude, as far as the 18th parallel, the eastern boundary runs with the 21st degree of longitude. In 1890, for some unfortunate reason which can never be satisfactorily explained, access was granted to the Germans to the Zambesi valley, and they now possess in that direction a narrow wedge of country running between British Central and British South African territory."

It is not necessary to further emphasize the fatuousness of acquiring an isolated port when the whole of the territory between the Cunene and Orange Rivers might have been absorbed, but the fact must not be forgotten that the natural harbour of Walfisch Bay possesses a geographical and political

importance which can scarcely be over-rated. In Keane's *History of Africa* we read : " It gives direct access to the two great water-courses, Tsoakhub and Kuiseb, which here converge from the north-east and south-east ; it is thus practically the only natural outlet for a region some 400,000 square miles in extent, stretching from the sea-board inland to Zambesia, and from Angola southwards to the Cape. The whole of this region is at the mercy of the political masters of Walfisch Bay, which in the hands of an alien Power might serve as a convenient base of operations directed against the British possessions between the Zambesi and Orange Rivers. At present this vitally important strategical point is an administrative dependency of the Cape, and it is politically held by England in trust for her future South African Empire, the consolidation of which has already begun. Hence it is not surprising that both the Imperial and Colonial Governments are at one as regards the policy of holding this commodious naval station and declining to treat with Germany for its surrender on any terms. If Germany cannot retain profitable possession of her hastily—perhaps rashly—acquired South-West African Protectorate without Walfisch Bay, she must abandon it, for Great Britain cannot certainly afford to abandon Walfisch Bay. The harbour, easily approached by a channel four fathoms deep, affords good anchorage in depths of four to five fathoms, and is completely sheltered from all winds except those blowing from the north-west, which are rare on this sea-board. It takes its name

from the whales which formerly abounded in the neighbouring waters, but which are now rarely seen. The ostrich and elephant, at one time numerous on the surrounding grassy uplands, have also disappeared, so that the ivory and feathers formerly shipped at this port have now given place to hides and cattle exported chiefly to the Cape. Since the German occupation of Damaraland, Walfisch Bay has been declared a free port for all exchanges with Europe and the Colonies. It has thus retained the foreign trade which might else have been diverted to the neighbouring German station of Sandwich Haven. The Walfisch Bay territory is inhabited by the Topnaar tribe, who are a branch of the Nama Hottentots."

In the hope of increasing the considerable trade that formally passed through the port of Walfisch Bay, a substantial pier, 200 yards long, with all necessary appliances was erected, but the occupation of the surrounding territory by Germany cut off the settlement—which had a population of about 150 whites and under a thousand natives—from the interior, and with the exception of men-of-war it is visited by few vessels. But with the occupation of the colony by the English and the hoisting of the English flag at Windhoek, Walfisch Bay would become an important harbour, and the present railway to Swakopmund could be linked up with Walfisch Bay by a new line about twenty-five miles in length.

Having acquired German South-West Africa, if

not by the sword, at least by the boasted rattle of that Imperial emblem, German officials proceeded to colonise it on military lines. There is no British territory in South Africa which is so little developed as this colony, but it is burdened with more official ordinances and regulations than would be required to run an Empire. The railways have been constructed with regard to their strategic importance; the townships have been laid out at points selected by the administration in conformity with their plans for strategic purposes, as opposed to local and economic development. A former British colonist of the South-West, while testifying to the progressive qualities displayed by the German farmers, has described the administration of the colony as mischievously autocratic. In his own words: "There is far too much government. There is one official out of every three in the population, and it is a great burden on the country. Take a place like Keetmanshoop. The town and country around can be compared with Uppington and the district, where they probably have a magistrate and one or two clerks. At Keetmanshoop they have a Deputy-Governor with a secretary and about half-a-dozen clerks, in addition to ten or a dozen policemen who are also largely engaged in clerical work. Then there are the law courts, with two judges, a secretary, and another half-dozen clerks. There is, it is true, an awful lot of litigation, chiefly over debts.

"It can hardly be said that the English are looked upon with favour. The Germans don't

approve of them, and the English don't like the Government because there is too much red tape. The Dutch population is not pleased with the Government, which they find very different from what they were accustomed to have. I do not think much of the future of the country—at least under German rule. It is highly mineralised, but it has still to be developed. I have no great opinion of the German as a coloniser, for one thing, because he wishes to do everything on the same lines as he does it in Germany. The system of Government is an elaborate machine not at all suited to a thinly-populated country like German South-West Africa."

On this subject of the difference between British and German ideals of Empire, the *Times* recently pointed to the action of the Dominions and of the native Indian rulers as a triumphant vindication of the British principles of world-power, which von Bernhardi and other German writers have affected to deride. "The lesson is not for Germany alone," the article declares, "but for the world at large and for some of our own politicians at home. The German attempts at Colonial expansion have been a lamentable failure because they violate deep-seated principles, and the German claim of a superior moral right to rule on the ground of superior strength is based on a superficial and fallacious conception of the nature of strength and weakness in world-politics. If, indeed, we had borne ourselves cravenly in this crisis, and had behaved as some of our politicians would have had us behave, the German estimate of

our Imperial weakness might have been justified. The Germans will learn through bitter disillusionment that their teachers are wrong, and that our apparently weak rule conceals a virility equal to their own and more stable because rooted in liberty. South Africa presents this lesson in the most direct and convincing form, because there the Boers, converted by British rule to be its enthusiastic supporters, are defending it against the Germans, to whom they looked as saviours before they knew what British rule was like. Their choice is as deliberate as it is decided, and no German thinker can honestly misread the lesson it contains or ignore the contrast it offers to Alsace-Lorraine under German rule."

In constructing its railways, the German administration has pursued the policy of cutting off the colony from all intercourse with the rest of South Africa, and of forcing communication with the interior through Luderitzbucht and Swakopmund. Thus of the three main lines from the coast into the interior, two have their termini at Swakopmund. The northern service continues through Omaruru to Otavi, whence one branch goes to Grootfontein and the other to the Tsumeb mine. The second continues in a north-east direction to Karibib, and then circles around south through Windhoek, Rehoboth and Gibeon to Keetmanshoop. The extreme southern line starts from Luderitzbucht, and continuing through Seeheim links up with the Windhoek-Keetmanshoop railway. From Seeheim a railway runs due south to Kalkfontein, from which point a line has been

under construction to Warmbad, not far from the Orange River border. A scheme was under consideration some time ago for continuation of the railway from Keetmanshoop to Rietfontein on the border, whence a line might at some time be extended to Kuruman. By the construction of this line German South-West Africa would be brought into direct communication with the Transvaal, and thus enable miners and farmers from the Union to open up the territory. As there is no coal in the colony, it would be a means of importing the coal which is necessary. The principal point of interest in connection with these German South-West African railways, from the point of view of the Union, has always been the possibility of linking up the Union railways with the coast and thereby reducing the ocean distance to Europe.

The latest German scheme of railway extension was designed for the opening up of Amboland. The completion of the Amboland railroad would be followed by a line connecting Gobabis, the centre of the eastern district, with Windhoek. When that connection had been made, it was officially considered that the requirements of the farmers, as regards railway transport, would have been practically fulfilled.

It is highly probable that these suggested and projected extensions of the present railway service of the colony will be duly undertaken, but of more immediate importance would seem to be the completion of the new line from Prieska to Upington,

and the linking up of Upington by a railway connecting with the Luderitzbucht-Kalkfontein line, which is now being pushed forward to Warmbad. The Railway Commissioners, in the course of their exhaustive report upon the Prieska-Upington line, state that they visited Marydale, Upington, Keimoes, Kakamas, and Kenhart, and are satisfied that substantial agricultural development will result from railway communication, especially if irrigation works on the Orange River and its tributaries are extended. In regard to the irrigation possibilities along the river, the Commissioners admit that the Department of Irrigation is not yet in possession of information of a really definite nature, but a detailed survey is now in progress amongst the maze of islands at and down-stream of Upington and on a considerable length of river-frontage up-stream of Upington. The results of the survey are not yet available.

The Commissioners, however, were informed upon what they regarded as reliable authority, that on the up-stream side of Upington there is irrigable land, both river-frontage and on the islands, to the extent of 26,000 acres, and on the down-stream side, for a distance of eighty-five miles west of Upington, some 50,000 acres, well supplied with water and capable of development. Further, it is estimated that there are some 50,000 acres of good land, which, though not irrigable by gravitation, are capable of being put under the furrow by pumping. The soil is very fertile, and the fruit grown, both oranges and grapes, is of excellent quality, and has the advantage that it

can be produced at a time when it could be disposed of in the European markets without much competition from elsewhere. Wheat and other cereals could be grown, but it will probably be found more advantageous to cultivate crops which would yield a higher monetary return per acre.

The Commissioners, while agreeing that the Prieska-Upington Railway was desirable and would promote considerable agricultural development, and while feeling that the energy and enterprise of the inhabitants of the area to be served entitled them to sympathetic consideration, are unable to record that this railway is likely to be remunerative from a financial point of view for many years to come, and they are of opinion that there are other districts in the Cape and elsewhere in the Union without railway communication where the construction of railways would produce better financial results. Circumstances have arisen, however, which make it possible that the railway will become a paying concern sooner than was anticipated, and the Union may congratulate themselves upon the rapidity with which the work was conducted. The despatch of the first train from Prieska to Upington on the 18th of October, 1914, signals the completion of the first section of the line, which will probably be extended into the South-West Colony without delay.

The following are the details of the railway: Approximate length of line, 150 miles; gauge, 3 ft. 6 ins.; estimated cost of construction, £337,500; average cost per mile, £2,250; estimated capital

cost, including £201 per mile for rolling stock, £367,650; ruling grade (compensated for curves), 1 in 66; curves (minimum radius), 660 ft.; weight of rails, 60 lbs. (second-hand).

The Prieska-Upington Railway follows a nearly straight route, except for a sharp bend to the south for a few miles just after leaving Prieska, where the line keeps to the right bank of the Prieska River before crossing the Doornbergen. Over the rest of the route such hills as exist are well avoided, and the railway runs at a fairly equal distance from the Orange River all the way, crossing numerous small watercourses, suggesting good farming possibilities in the neighbourhood.

Upington, in Bechuanaland, the capital of Gordonia—the largest district in the Cape Province—is the southern gateway of the Kalahari Desert. It was an out-of-the-world village, being 120 miles from the nearest railhead at Prieska. Its history is lost in antiquity. The story runs that years ago it was honoured by a visit from the Cape Attorney-General, Sir Thomas Upington, and the Prime Minister, Sir Gordon Sprigg. And these two genial knights left—not their spurs on the table, as in the old Border tale—but their names on the map, to commemorate their visit. And so this immense and desolate region was duly christened, and then forgotten. Since then, these lost tribes will tell you, in slow and solemn tones, no Cabinet Minister has ever deigned to set foot in their “dorp,” or district. Yet the simple facts, as set forth by Dr. William Macdonald

in an article in the *Westminster Gazette*, are these :
“Here is a progressive and highly intelligent community, possessing a river frontage fringing the finest orange-lands in the world, backed by a truly magnificent ranching country, stretching northward for four hundred miles—the largest, richest, and grandest district in the Cape Province, paralysed and perishing for lack of a railway. And now, through the fortune of war, it is coming ! ”

The district of Gordonia has an area of 18,499 square miles, more than two-thirds of which is unsurveyed waterless desert—the southern portion of the great Kalahari Desert. This part of the desert is inhabited by roving bands of semi-savage natives, who live on the Tsamma melon, extracting the water from it for drinking purposes, and grinding the pips to make a sort of coffee. The southern boundary of the district is the Orange River, on which there is a frontage, as it may be called, of 200 miles. This frontage is occupied by a series of long, narrow farms, averaging a breadth of three miles on the river, and stretching northwards back from the river for a distance of fifteen to eighteen miles. They were originally laid out on the basis of half-an-hour's ride along the river and two and a half hours' ride away from the river into the “Back Country.” Between these river farms and the actual desert there is a considerable area surveyed into large farms, varying in size from 10,000 to 100,000 acres.

PROGRESS, POPULATION, AND THE MILITARY SYSTEM

DR. ROHRBACH, the Imperial Emigration Commissioner, declares that German South-West Africa has made greater progress during the last ten years than any other African colony. On the whole, every district is being more or less vigorously developed, and he claims that the Protectorate is at least as profitable as Cape Colony was in the early days. The Cape exports wool, mohair and ostrich feathers to the value of about 100,000,000 marks yearly, and as in South-West Africa there is as great an area available for small stock as in Cape Colony, he argues that there is no reason why its exports should not be equally large.

If the British Consul's Report for the year 1913 does not entirely bear out this glowing retrospect and prediction, the statistics he supplies shows that the colony is in a prosperous and progressive condition. For the six months ended June 30th, 1913, the total trade value was £2,357,100, which compares very favourably with the £3,517,100 which represented the full year's trading in 1912. The Government revenue for the year ended March 31st, 1913, was £1,081,400 as against an estimated revenue of £766,500, while the revenue and expenditure for the year ended March 31st, 1915, have been estimated to balance at £2,081,157.

In 1912 the exports exceeded the imports by £321,375 and by £517,127 in the first six months of 1913. This strange disparity in the case of a young country, badly in need of capital, must be attributed to the sudden forward movement in the development of the diamond fields. The diamond industry is the dominating factor in the colony's trade, but the number of persons employed and the money circulated in the country by the industry, are small when compared with the value of the diamond production. Moreover, as the British Consul explains, "the lion's share of the actual profits goes into Government revenue and pays for the civil administration of the country. In 1911 there was a small deficit, but 1912, which bade fair to be a lean year, necessitating caution, ended with a handsome surplus of actual over estimated revenue, while the surplus for 1913 amounts to something like £800,000. The greater portion of the surpluses of these two years has been devoted to the liquidation of liabilities previously incurred. A new period of construction of public works out of revenue will start in 1914. The bulk of the dividends paid by the diamond companies goes into the pocket of absentee shareholders, who are cautious about making new investments in German South-West African enterprises."

These remarks seem necessary to make it clear, that a sudden increase in the amount of wealth extracted from the diamond fields, does not necessarily imply an immediate corresponding improvement in the general prosperity of the country. The

improvement in the figures for the first half of 1913 is due entirely to the mining industries. The most satisfactory increase is under the head of machinery, which increased from £50,783 to £122,504. As this represents increased equipment for future production, the benefit thereof will be felt in subsequent years.

Of the two German ports, Luderitzbucht is a nice little harbour capable of great improvement, while Swakopmund must be regarded as an expensive and unsuccessful experiment. Swakopmund, as the terminus of the railway, is a place of importance, being a passable town with two-storeyed houses, straight streets, and public offices. But landing in the harbour is very difficult, large vessels having to anchor 1,000 m. from the shore, and goods to be transferred into lighters and landed through the terrible surf and sandbanks. In 1898 the German Government resolved to construct a harbour at Swakopmund, the mouth of the Swakop (Zwachaub) River, twenty-five miles to the north of Walfisch Bay. A wooden landing-pier, built at a cost of £30,000, was replaced by a stone jetty, at the cost of £160,000. This was partly demolished by the sea and has been abandoned, but an iron jetty, 600 yards long, is in course of construction.

Luderitzbucht was originally called Angra Pequena by its original founders, the Portuguese. Their fleet, consisting of two vessels of 50 tons each and a store ship, under the command of Bartholomew Dias, left Portugal in 1486. Sailing southward, and

passing along a barren shore, covered the greater part of the time by a thick haze, Dias came to an inlet or small gulf, with a group of islets at its entrance. There he cast anchor, and for the first time Christian men trod the soil of Africa south of the tropic of Capricorn. To this inlet he gave the name of Angra Pequena, or small bay, and by this name it was known until the German occupation of South-West Africa.

The town of Luderitzbucht has been greatly benefited by the diamond discoveries made in the district, and now contains many well-built, comfortable houses dominated by the large cathedral on a hill. The surrounding country has no vegetation, and little greenery of any kind is to be seen, but the formation of brown-grey rocks is picturesque, and the hills and valleys surrounded by a margin of sea are not at all unsightly. A cool breeze blows from the north, but during December, January and February the heat is trying. Water is almost non-existent. It is brought in tanks from Cape Town or condensed on the spot. No corrugated iron being allowed except as sheds or working premises, the buildings have a ship-shape appearance. There is a great deal of sand in the streets, and such trolleys as there are, are only used for merchandise. The dinner hour (or hours) occurs in the middle of the day, and there is a long siesta afterwards, black girls meanwhile sitting on doorsteps to guard business premises. There is a more pretentious style of architecture than is common in such small places in Africa. The few people who are in the streets are

well dressed and have a prosperous air, children playing in the sand, being red-cheeked and healthy. Luderitzbucht is free from fever, and there is little illness of any kind. The great drawbacks are lack of water and the absence of trees and gardens. The people take infinite pains to produce something green, bringing up soil from Cape Town, but their efforts in this direction are not very successful. Preliminary works in connection with a water supply for the town of Luderitzbucht have been carried out. A plentiful supply of water has been struck by boring in the valley of the Kuichab River near Aus. Financial considerations seem likely to postpone the laying of the pipe line and the construction of the reservoirs. The cathedral has two stained-glass windows given by the German Emperor and Empress. Looking at the sea from a height a blue bay spreads out, surrounded by a wreath of arid grey rocks, and marvellous swirls of sand-dunes created by the wind, which is renowned here. The sand and rock resemble a sea, and geologists think that centuries ago the land must have been the bottom of a great ocean or river bed. At the back of the town are the recreation grounds and the race track of Boerenkamp. Luderitzbucht has its race meetings on holidays, but as yet there is no theatre. From the hill the entire panorama is seen distinctly, including Shark Island, on which is erected a large hospital.

Dr. Schultz holds that Luderitzbucht harbour, the rocks of which rise bare and steep from the sea, was

once a submerged valley. A ridge of rock, 5 kilometres wide, which forms its western wall, terminates at Angra Point. On the east it is landlocked as far as Diamantenberg (Diamond Mountain), while the neighbouring Shark Island on the north is so near the mainland that the intervening strip of water has been bridged over. The English islands—Penguin and Seal Island—which once formed the summits of the eastern wall of this sunken valley, have lost their connection with the mainland. Roberthafen, in the innermost corner of the bay, is described as the safest landing-place for men and goods in the whole Protectorate.

According to Dr. Schultz, the artificial harbour of Swakopmund is silted up by the Bengal current and the surf. The masses of sand which level the coast at some places vary its formation in others. Walfisch Bay, for instance, owes its existence to a tongue-shaped strip of sand, which shuts the bay off from the raging surf. The remarkable transformations that have occurred at Sandfischhafen are proof of the changes which take place along the entire coast of South-West Africa. In 1832 seal-hunters anchored in Sierra Bay, three miles south of Cape Cross. Sixty years later the entrance of the bay was dammed up by a wall of sand, 500 to 600 metres wide. In 1829 Morrell anchored in a beautiful bay, which fifty years later had entirely disappeared.

Windhoek, the capital of the colony, consists of two settlements—Great Windhoek, which is the

garrison and headquarters of the officials, and Little Windhoek, which is inhabited by the civilian settlers. The natives live outside the town at Matten Pontocks. Windhoek is 1,625 m. above sea-level, in the midst of a peak-like district, surrounded by hilly country covered with brushwood. Being until recently the terminus of the Swakopmund Railway, Windhoek was practically the economic centre of the colony. Tsumeb, the terminus of the line in the Outjo district, is a place of importance owing to its vicinity to the Otavi mines. Rehoboth, south of Windhoek, is the centre of a rich and well-watered grazing district, and Mariental, still further south, in the Gibeon district, boasts a remarkably fine flood-dyke with a reservoir 12 metres square, having a capacity of 40,000,000 cubic metres of water. The Keetmanshoop district is only remarkable for a tobacco farm at Seeheim, an unsuccessful diamond mine at Berseba, and a scarcity of rain. Kubub was formerly a flourishing sheep station of the German Kolonial Gesellschaft, and was destroyed by Witbooi in 1903.

The European population of the Protectorate was arrived at by census on January 1st, 1913, when the total number of persons was officially returned at 14,830, including the military. During 1911 the number of British subjects decreased from 204 to 169. With regard to the native population, the figures are partly arrived at by guess-work, and the statistics do not pretend to be accurate. The number of natives actually counted on January 1st, 1913, was 69,003, and the total estimated population

was set down at 78,810. In addition to this total, there were some 2,648 foreign natives resident in the country, of whom 2,089 came from the Cape. The population of Ovamboland, and the Caprivizipfel, together, was roughly estimated to be between 150,000 and 200,000.

The comparatively small population of German South-West Africa proper, explains the scarcity of native labourers from which the country is suffering. The Hereros, Bergdamaras and Hottentots are employed in farm work and as domestic servants, and it was arranged by the mines and railways that the recruits arriving from Ovamboland should be shared between them. Of the 27,543 adults of every race in the country on January 1st, 1913, 5,557 were Ovambos and 2,462 were residents from beyond the borders of the Protectorate. Of the total number, 24,645 were in the employ of Europeans. The number of labourers that came from Ovamboland in search of work in 1911 was 9,295 ; in 1912, 6,076 ; and in 1913, as the result of droughts in their own country, no fewer than 12,025 recruits arrived in the Protectorate. These figures, derived from the latest British Consular Report, illustrate the irregularity of the supply of native labour. In the middle of 1913 the various industries had practically all the labourers they required ; by the end of the year there was a shortage. From the returns made by the Luderitzbucht Chamber of Mines, it is seen that the number of Ovambos employed on the diamond fields in 1913 rose from 2,007 in January, to 4,724 in

May, and dropped to 2,494 in November. When the supply of Ovamboland natives runs short—the Chamber of Mines estimated the shortage of labourers at 2,650 in November, 1913—the employers fall back upon the Cape boy, of whom an average of rather more than 11,000 were engaged on the diamond fields in 1913.

As the Cape boy is paid £3 per month and his rations, as against £1 5s. plus rations, which is the standard wage of Ovambo labourers, the Government and the large employers of labour are doing their utmost to attract recruits from the Ovambo district. As far as circumstances permit, the housing, clothing, transport, and hospital arrangements have been improved, and the decision to construct a railway line to the Ovambo border arose from the urgent necessity that exists for developing the labour supply.

The farmers and agriculturists complain that they are handicapped not only by the scarcity but also by the unreliability of native labour. The difficulty in the latter respect can be traced to the inability of the German employer to handle the natives. The farmer who learns how to manage his servants, and understands their limitations, has no difficulty in getting his work done ; but the native has his preferences, and while on some farms there are sufficient labourers for every emergency, there are other farmers who cannot get their hands to stay. The police have adopted a conscriptive method of rounding up loose natives and apportioning them to masters in need of servants, but the scheme is made

inoperative by the perverseness of the natives, who melt away from unpopular farms and betake themselves to the wilderness.

Before the Herero War opened on January 11th, 1904, the Hereros formed the most important tribe in German South-West Africa. A few thousands of them had been converted to Christianity by the Rhine Mission, which had representatives in Namaqualand and Damaraland long before the Protectorate was proclaimed. The Rhine Mission had, in large measure, cleared the ground for European rule by establishing some sort of relations between the Mission and the natives. They laid the foundations for peaceful occupation, while the German military authorities, who followed them, declared war on the new converts and, in the course of the campaign, annihilated from 15,000 to 20,000 Herero natives—probably half of the entire race. The days of the Herero lordship of large tracts of land and vast herds were terminated, and the tribesmen began to deteriorate. They even abandoned their native dress and adopted European clothing.

In the north of the colony lives another black tribe, the Bergdamaras, who were formerly slaves of the Hereros. They are very uncivilized, but make good workmen, and speak the same language as the Hottentots. The Ovambos, who inhabit Amboland and Portuguese territory, are a powerful race, who do not live by breeding cattle but by agriculture. The Okavangaris, who inhabit the Okavango River, in the extreme north of the colony, dwell in villages

surrounded by pallisades, like the Ovambos, to whom they are nearly allied. The natives of Bustardland, in the south, who occupy the region south of Windhoek, across the Auas Mountains, are a mixed race of Boers and Hottentots, dwelling in extremely primitive imitations of European houses.

Although the friendly tribes rendered the German forces valuable service as scouts during the Herero War, a scheme for training the natives to arms proved futile. The Bustards are fairly reliable for military purposes, but all the other native tribes gave more than sufficient proof that they are unfitted for anything but labour—as regular troops they showed themselves to be impossible.

The colonisation of German South-West Africa was based on the Anglo-French model of granting concessions for private enterprise. The first concession was secured by the Deutsche Kolonial Gesellschaft, which took over the Luderitz settlement, and other commercial adventurers quickly followed their lead. Concession hunting, among the early settlers, seems to have been the principal business, and mineral rights over large areas were sold by the chiefs to various individuals, syndicates and companies. The concessions were in some instances transferred to third parties, and eventually the mining rights of the whole country were held by the following: The Deutsche Kolonial Gesellschaft, the South-West Africa Company, the Kaoko Land und Minen Gesellschaft, the Otavi Minen und Eisenbahn Gesellschaft, the Hanseatische Land und

Minen Gesellschaft, the Gibeon Schuerf und Handels Gesellschaft, the South African Territories Company, and the Government, after the confiscation of the native tribal property. Each of these companies had its own laws, regulating or prohibiting prospecting operations, the relative merits of which need not be discussed. The Government recognised the desirability of obtaining greater uniformity, and entered into negotiations with the object of bringing the whole country under the Government Mining Ordinance of 1905. The Deutsche Kolonial Gesellschaft was the first to come into line. The remaining companies stood out. In order to bring pressure to bear upon them, the Government took powers under an ordinance dated April 10th, 1913, to impose a tax, not exceeding $\frac{1}{4}$ d. per hectare per annum, upon the concession areas which were not submitted to the Imperial Mining Law. This had the desired effect, and all the companies, with the exception of the South-West Africa Company, entered into agreements with the Government. The Kaoko Land Company and the South African Territories Company reserved certain circumscribed areas in which they had discovered minerals, but as for the rest of the country the Imperial Mining Ordinance of 1905 was in force when war was declared. The royalties payable to the various companies were fixed by the agreements.

The Concessions System has given very little satisfaction—the disappointment being attributed to the half-hearted, dilatory methods adopted by the

companies—and the desirability of introducing a better system was being considered by the administration when war was declared. Eight concession companies had an aggregate original capital of 86 million marks, of which $34\frac{1}{2}$ millions had been paid up, and of these, six companies had sunk or squandered about 8 million marks without in any way benefiting the Colonial finances. The Government, it appears, were impatiently waiting for them to fail in the fulfilment of their obligations in order to forfeit their concessions.

The practice of granting concessions led, in 1887, to the introduction of the military system, for in that year gold was discovered on the Deutsche Kolonial Gesellschaft's land near Pot and Anawood, and the Imperial Commissioner represented to the Government that a military force was necessary for the protection of the mines. Although the funds of the company were small, they expended 70,000 marks in 1888 on the formation of a body of troops. Dr. Göring engaged a couple of subalterns and several non-commissioned officers, who, in May, 1888, were stationed at Otjimbingwe with twenty Bustards and Hottentots under them. They were put into uniform, and formed the nucleus of a larger unit recruited from the natives.

This force was badly organized, very expensive to maintain, too weak to keep the natives in order, and absolutely undisciplined. It fell to pieces directly the Hereros assumed a threatening attitude and, in 1888, it was disbanded, and replaced by a

[body of mercenary troops. Eight men, selected from the " active " army and thirteen reservists, were put into yellow-brown uniforms, and armed with Maüser " carbines " (these arms were found to be unsuitable and were replaced by Maüser's model 71/84 and later, in 1890, by model 88), revolvers, &c. This was the nucleus of the body of troops which was transformed into an Imperial force in 1894. At first it was instructed :—

(1) Not to engage in warlike expeditions, especially against the Hereros. (2) To visit the chiefs and keep peace between them ; and (3) To arrest the English agitator, John Lewis, or to make him " unschädlich " (literally harmless). If serious opposition were to arise, Lewis & Co. were to have their communications with Cape Town and Walfisch Bay cut off, and the chiefs were to have their imports of ammunition limited.

In 1897 the strength of the force was 700, divided into four field companies, one field battery and district troops. At the outbreak of the Herero rising their strength was 34 officers, 730 men in the field, 120 trained Bustard scouts, and a police corps. Police and field troops were on an absolutely distinct footing. The police were under the civil administration, and were divided into eight companies. The field corps was divided into four field companies and a battery, with a gun to each separate company. The artillery, of which the natives had a superstitious fear before the war, consisted of five 6 cm. quick-firing mountain guns, five older guns

c/73 for the defence of stations, four 5·7 cm. quick-loading guns, and five machine guns.

The stations were built fortress-fashion of stone buildings, or of walls surrounding courtyards; observation towers were built, and the water supply was assured. These fortified stations enabled small forces to withstand overwhelming numbers. The transport question being a particularly difficult one, the principal stations were made depots for wagons and draft oxen, and natives and 132 native soldiers were pressed into the service as drivers. Stores were brought from the coast by the Swakopmund-Windhoek Railway. The weakness lay in the small number of troops, and the difficulty of mobilization over enormous areas.

According to German authorities on the Herero War, no Britishers rendered the Colonists any aid in the protracted struggle, and we read that "the Boers in Grootfontein had enough to do to defend their own homes," but it is well known that the Colonial troops, at the beginning of the rising, were strengthened by 1,141 whites, including hundreds of British and Dutch irregular troopers. This force was reinforced during the war, but to what extent is unknown. Dr. Kulz says that in March, 1907, it was reduced to about 7,000 men, and divided into a Northern and a Southern Army, and that in 1909 it was further reduced to 2,431 regulars, while a scheme for the formation of a reserve force of white settlers and a volunteer corps was under consideration.

According to the German Year Book (1913) the

white troops in German South-West Africa consisted of a rapidly increasing force of 2,500 men in twelve companies, armed with three detachments of machine guns and three batteries, an equally numerous corps of armed civilians, and an establishment of 700 police, officered by soldiers.

Dr. W. Kulz, in *Deutsch Süd-Afrika in 25 Jahre* (1909), writes: "The greater part of the work done in the first twenty-five years of German rule in South Africa has been accomplished by German troops. The colony in its present form, and in its possible future development as a German country, would be an impossibility without the fights and the successes of the German soldier. In the past as well as in the future, there are other factors in the forefront of German dominion in addition to the soldier; but for the first twenty-five years he holds first place."

The exact strength of the German force in South-West Africa at the outbreak of hostilities is less uncertain than "its possible future development as a German country," but while we have reasons to know that the authorities would have been better prepared for war a couple of years hence, they made strenuous efforts to complete their military organisation in the time that the Kaiser allowed them. They had established large artillery bases, provided themselves with a big stock of guns and ammunition, and stored in huge warehouses provisions for at least six years. The military force is estimated by English authorities at from 3,000 to 10,000 men. "The main force," says the *Gwelo Times* (Aug. 6th,

1914), "which is known as the Protectorate Troop, is composed of Army veterans who have taken up their residence as Colonists in the country. The troop numbers about 2,500 men, and is commanded by officers of the regular army. This force is in garrison. In addition, there is a police force which, it is understood, numbers some 500 men. In the event of a general call to arms, to which all the Colonists must respond, it is estimated that an additional 6,000 men might be available. The aerial contingent consists of a monoplane and two biplanes. With these the scattered settlements and outlying desert are effectively patrolled." Later estimates place the total military forces at 10,000 officers and men.

The loyalty of the Boers of the Union in this struggle against the Germans may have been contributed to in no small measure by the treatment their people received in the South-West African Protectorate. At a time when Lord Selborne was declaring that "every German is an asset to this country," the *Luderitzbuchter Zeitung* asserted that "the only gratifying feature in the census returns is the fact of the large decrease in the number of foreigners in our midst." Theoretically the German is friendly towards the Boer, colonially and commercially he regards him as an intrusive and competitive foreigner, while personally he cannot forgive him for the services he rendered the Fatherland in the subjection of the tribes from 1904 to 1908. "But for the assistance of hundreds of British and Dutch

Afrikaners," writes the Special Commissioner of the *Transvaal Chronicle* of some two years ago, "it is doubtful whether the Herero War would have been settled even in the long space of four years. There are Boers in the country to-day who have rendered splendid services to the Germans, but who have been treated shamefully ever since, and are now fast leaving the country. . . . Feeling between German and Boer is very strained. They do not understand each other. The German soldier envies those of another nationality who wear the Kaiser's medals for conspicuous bravery and deeds of valour on the battlefield, and to-day many an Afrikaner wears the black and white ribbon—a coveted order. The shooting of Marengo, on September 20th, 1907, by Major Elliott, of the C.M.R.—a corps, by the way, into which so many Germans would like to get—was another event which fanned the jealousy of the German officials. They had been on the track of Marengo for months. Major Elliott settled the matter in a couple of hours, and the coveted 'Kaiser Medalle' went to him instead."

THE COUNTRY AND ITS RESOURCES.

DR. PAUL ROHRBACH declares that German South-West Africa is, of all the German Colonies, the most difficult upon which to form a correct idea unless one has a previous knowledge of a similar country. "A mental picture may be made of Cameroon or of East Africa"—Rohrbach is still the authority—"by exaggerating European German vegetation, rivers, climate, &c. In place of German woods, imagine a primeval forest with trees 60 m. high; in place of German gardens and orchards, cocoa palms and plantations; in place of meadows, elevated plateaux swept by tornadoes. Men like Wissmann, Schweinfarth, Stanley, and others have familiarised us with the appearance of tropical countries, but the South African landscape is composed of entirely local features, which find no parallel elsewhere."

The inhospitable aspect of the shore regions of the colony are described in *Unser Kolonialwesen*, by Herr Grotefeld, in a set of shorthand phrases: "Coast horribly desolate; reddish grey sand; climate cool, influenced by the very cold Polar Benguella current. Little rain, but very cloudy. Every harbour silted up by the surf. Dunes formed on land by the shifting sands. Coarse grass has to be cultivated along the Luderitz-Kubub Railway to prevent the rails from being buried, and corrugated

iron tunnels made in places. The Dune region extends 15-30 km. inland from the coasts—is succeeded by an equally desolate tract of wilderness—the ‘Namib’—50 to 90 km. wide. Enormous masses of sand, due to the sudden and violent changes of temperature acting upon granite, gneiss, and similar primitive rocks. It is said that on a cold night, following a hot day, the splitting of the rocks sounds like the rattle of musketry.”

Rather more than a quarter of South Africa, the territory which extends from the Zambesi to the Cape of Good Hope, is comprised in the German South-West African Protectorate. Here the mountains are so deeply buried that only their summits rise above the surface, for the masses of detritus, which in other lands are washed down to the sea by rains, have collected in the desert regions for thousands of years and serve to veil the original formation of the country.

Herr Grotefeld, in the same work, adds the following particulars to our knowledge of the mountainous district of the colony: “In the north the Waterberg Mountains, known on account of the Herero War, the Auas Mountains, near Windhoek (2,200 m.); north of them the Otjihaneero and Onjati Mountains, the Nunibeb, and the Gansberg Mountains (about 2,300 m.), near Nauchas; the Hanami Plateau, west of Gibeon; and, finally, in the south, the Small and Great Karasberge; the mountainous country near Kubub, &c. The highest mountain in the colony is Omatako (2,680 m.)—

about in the centre near Omaruru. These mountains are all bare, wild and desolate ; no vegetation grows in their glowing rocks: they are, however, rich mineral treasure-houses."

The northern district of German South-West Africa includes Amboland, and the Cunene River—the frontier river between the Protectorate and Portuguese territory—flows through the region. The rainfall is heavier here than in the fruitful rainy district of Grootfontein, and maize, beans, &c., can be regularly cultivated, but the semi-tropical, unhealthy climate has made it impossible for permanent European settlement. The most beautiful district in North Hereroland lies around the Waterberg. The Waterberg is a bold plateau of red sandstone, the upper edge of which is almost perpendicular. Beyond it begins the Grootfontein, or Northern District. Its physical character is different from that of Hereroland, and it is important on account of the great copper deposits at Tsumeb, which yield 30,000 tons (" Tonnen ") of ore annually. In the neighbourhood of Tsumeb and Grootfontein woods and palm trees show that we are gradually approaching tropical Africa. The rainfall in the Grootfontein district is so heavy that, in favourable years, crops, and especially maize, can be grown without artificial irrigation. The drawback here is a certain amount of malaria, but all experts are agreed that this is the best district of the whole country.

The district in the extreme north of South-West

Africa, on the Okavango River, is similar to Ambo-land. The Okavango River flows throughout the year, and runs through a very fertile valley, but the region is so remote that it has not yet been colonised. In the south of the colony are Namaqualand and Bustardland. The east, with Gobabis as an administrative and farming centre, resembles Hereroland in the advantages it offers to farmers. The road leads through Bustardland to the former country of the Hottentots or Namas. The whole region south of Rehoboth, the chief town of the Bustards, is simply known as the "Suden" (the south), and its chief artery is the Fish River. In the central Fish River district lies Gibeon, formerly the chief town of the Witbooi Hottentots. The Gibeon district and the whole of North Namaqualand is important on account of the sheep that are bred there, especially for their wool. In South Namaqualand, the Keetmanshoop district has less water, and is the most desolate part of South-West Africa, except the Namib, but there are many places in it with sufficient grazing-land and water to support cattle. The southern frontier of the colony is formed by the Orange River, but it is not navigable owing to its very rocky bed and the swiftness of its current.

The western coast of South Africa is influenced by the cold ocean current, as the English territory on the east is affected by the high chain of the Drakensberg Mountains. These condense the moisture from the Indian Ocean before it crosses the mountains, causing abundant rains to fall upon the narrow tract

of coast country between the Drakensberg and the ocean, but the regions that lie in the so-called "shadow of the rain"—Cape Colony, the former Orange Free State, part of the Transvaal, the Kalahari steppe and German South-West Africa—are left with little rain, and only a small amount of the moisture brought by the monsoon from the Indian Ocean reaches the Protectorate.

Actual rain only falls in South-West Africa during a few months in the year, from December to March, and never later than some time in April. This rainy period is also the hottest in the year. It must not be supposed that rain falls continuously during the rainy season in South-West Africa, as in the tropics; the individual rainstorms are often separated by rainless intervals that last several weeks. The rainfall is lowest in the south of the colony, where it totals only 50 to 100 millimetres in the year. In the central districts—Windhoek, for instance—it is from 300 to 400 millimetres in the year, not less, therefore, than in some countries in Southern Europe. In the north, in Grootfontein and Amboland, 500 to 700 millimetres fall in the course of the year, or as much as in North Germany; but the rain is all concentrated into one season of the year. The dry climate of South-West Africa determines the economic working of the country. It is impossible to cultivate the soil according to European methods in a land where, as a rule, no rain falls for nine months together. Agriculture in South-West Africa is only "garden" culture confined to small

areas, and assisted by irrigation. Only in the valleys, which are flooded during the rainy season, does a little loose and really fertile soil collect, but the rivers flow only for a few weeks, sometimes only for a few days, above ground. Often a "rivier" is formed (a word from the Boer language, meaning, throughout the whole of South-West Africa a periodical river-course, generally filled with sands that contain water). Streams are very rare in the colony, the farmer having to obtain the water for irrigation from wells or reservoirs.

On the alluvial land of the "riviers" are a number of small holdings on which vegetables, wines, fruit, tobacco, &c., are cultivated. Throughout the whole of South-West Africa part of the rain water sinks through clefts in the ground, part of it quickly evaporates, and part of it collects in countless large and small "dry beds," a great network of which intersects the greater part of the country. Into these, great masses of sand and rubble are brought by the rivers and usually fill up the whole of the beds of the "riviers." In the wider valleys, on each side of the gravel and sand beds, a strip of darker and very fertile alluvium is often deposited, which absorbs water. This is the soil for the small cultivator. When, after heavy rain, the water washes down the "riviers," the sandy bed and the alluvium on both sides suck up the moisture, and only after excessive rain is the "rivier" completely filled up by the rushing water, as the bed of an ordinary river would be. This flowing of the "rivier," as it is called,

sometimes lasts for only a few days, often for only a few hours, or it may occur several times during the rainy weather. There is not a single stream in the whole colony that flows continuously throughout the year, with the exception of the three frontier rivers. Where the layers of sand and alluvium are sufficiently thick, they store up part of the water they have absorbed until the next rainy season. If a well be sunk in the bed, or near it, water may often be found a few feet beneath the surface ; but it is usually necessary to bore deeper for it. In places where the bed is confined by rocky banks, or cliffs, the water rises from the depths of the sands and flows on the surface, sometimes only for a distance of a few feet, sometimes for several kilometres, before it again disappears in the sand. In dry years no South-West African " rivier " can be depended upon for a water supply. In consequence of this a very large amount of irrigation is necessary in so dry a climate. The average calculation is from 5 to 10 litres of water to one square metre in every twenty-four hours, according to the nature of the crop. On account of the great initial cost of irrigation, the prices of garden products are very high in the Protectorate : a hundredweight (zentner) of potatoes costs 8 to 15 marks ; a pound (pfund) of grapes 50 to 70 pf.

Herr E. Hermann, in *Viehucht und Bodenkultur in Deutsch Sudwest Afrika* (1914), is very pessimistic about the future of the Protectorate as a farming and agricultural colony, but he is an enthusiastic

believer in its prospects for stock-breeding. "The country," he writes, "with the exception of Amboland and a few other districts too remote to be colonised, is essentially a cattle-breeding land like Australia, the Argentine, West Texas, and the remainder of South Africa. The rainfall is seldom sufficient and the soil is rarely suitable for agriculture; labour and markets are scarce; and prices for produce, although high, often do not cover cost of transport, irrigation, &c. In the south and centre of the country, out of an area of many thousands of square miles only a very small proportion is arable land. The few markets there—Windhoek, for instance—do not owe their existence to the produce of the surrounding country, since it is in a mountainous, rocky region, in which the plough can only penetrate the ground in a few isolated spots.

"Some farms, favourably situated near the railway and the larger towns, can often be worked profitably, but if the sale of vegetables, maize and potatoes is the farmer's only resource, he will be ruined in dry years. He should breed cattle chiefly, and besides cattle-breeding, every farmer should cultivate a limited area, and conserve a sufficient supply of water for his cattle and crops. Crop-growing is a secondary consideration, but can be made very profitable in good years."

If "garden culture" *only* be decided upon, the ground must be very carefully chosen. Windhoek, Osana, Okahandja, Omaruru are favourable places, but land is very dear, the price having been fixed by

Government in 1907 at from 75 pfennigs to 1.50 mk. per hectare, and taxes. Herr Hermann also warns new settlers that they must be prepared to compete with people already established. He considers that tobacco growers with experience and capital might do well; fruit growers require to be equipped with great experience, and be prepared to work in the country a long time before they can learn the local conditions. Their ultimate success, he contends, will depend upon the amount of their capital.

But if Herr Hermann sees but a poor and uncertain prospect before the agricultural future of the Protectorate, he can be enthusiastic upon its possibilities in one respect. "The whole country," he writes, "is open to cattle-breeders. Every blade of grass, every leaf, every shoot, possesses unusual nourishing properties. This is proved by the fat, good condition and strength of the cattle, mules, horses, &c., that are fed on this dry but extraordinarily nourishing fodder, even after a ten months' drought. . . . One district is best for cattle-breeding, another for small stock, another for horse-breeding, but cattle can be raised everywhere; even the most desolate districts, which look like veritable deserts to the new-comer, can be turned to account by grazing the cattle over a large area—to make up for the scanty grazing. Sufficient water for cattle can be obtained in almost every district."

This high opinion of the possibilities of the region as a cattle land is corroborated by Dr. Rohrbach, who, as a Commissioner entrusted by the German

Government with the formation of a scheme for the systematic settlement of the country, travelled extensively in the Protectorate and published an extremely careful and valuable report. "In spite of the varied nature of the land," he concludes, "from the Orange River in the south to the Cunene in the north, and from the Namib in the west to the Kalahari in the east, its vegetation and conformation are those of a sub-tropical steppe and grazing country, which is marked out by nature herself for cattle-raising. Although this is evident, South African cattle-breeding cannot be undertaken on an extensive plan, as in Germany, where the cattle are kept under cover during the winter, and roots, hay &c., are grown to feed them with; where high milk and meat-production are assured, and large dairies are supplied. Milk products can only be sold at a profit in South-West Africa in the vicinity of the larger towns, and the cultivation of fodder is limited to a very few places. The grazing veldt in South-West Africa has no resemblance whatever to European fields or mountain pastures. Instead of a green sward, isolated clumps of grass grow here and there with bare ground between them. The grass growing on a certain given area is, therefore, in no way proportionate to its size; nor does the farmer allow the cattle to eat down his whole veldt between one rainy season and the other, as the expected rain of the following year may be insufficient or too long delayed to revive the exhausted grazing lands. Droughts are particularly frequent in the south of

the Protectorate. As the animals of South Africa are always in the open, great tracts of grazing land are necessary for their support. In South-West Africa 10 to 20 hectares of grazing land are reckoned to one ox, &c. ! Hence a farm of 1,000 hectares can only feed a few hundred head of cattle and a few thousands of small stock. The ordinary size of a farm in the colony is, therefore, from 5,000 to 10,000 hectares. Those who look upon the colonies with an unfriendly eye maintain that German South-West Africa is of no value to Germany, as only a few thousands of farmers could find room to settle there with profit. This opinion will not bear close investigation. The total area of the country is 800,000 square kilometres, of which about 500,000 sq. km. can be turned to account as grazing land. This corresponds to a total of 50,000,000 hectares, or 5,000 individual farms. 'So then,' say the opponents of our colonial policy, 'all the enormous efforts of these last years have been made for the sake of 5,000 farmers !' This certainly sounds like a very plausible argument. But it is not the number of South-West African farms, but their material importance as a market for the German home trade which is their chief value. Each farm requires every year several thousands of marks' worth of necessaries from Europe, of which the greater proportion are building materials, which have to be imported. South African trees do not produce good building wood, and beams, windows, doors, as well as galvanized iron for roofing, furniture, dress materials

and tools, all have to be imported. A farm must also be supplied with wind-motors, pumps, drainage pipes, &c.

“As the agricultural development of South-West Africa progresses, the population outside the farming districts will increase with it. Even to-day, when the whole country is far from being completely occupied, the large towns—Windhoek, Swakopmund, Luderitzbucht—have from 1,500 to 2,000 white inhabitants. Large towns, in the European sense, cannot develop in a purely agricultural country, as may be seen in the case of British South Africa. But the great importance of the mineral treasures of the colony must not be overlooked. In South-West Africa at present we only possess the diamond fields of Luderitzbucht, and the copper mines of Otavi and Tsumeb; but if other large deposits of valuable minerals are discovered—which is by no means unlikely—a strong development would set in, such as that of the Transvaal. As soon as large mines exist, the population and the revenue from trade increases, independently of agricultural profits. Even now the total value of the imports into South-West Africa is over 30,000,000 marks, and even supposing that no extraordinary discoveries are made, this sum can easily be doubled in the course of the next decade. The importance that our colonies are beginning to assume as a market for the home industries is therefore evident, and South-West Africa, when fully developed, will be well able to maintain a population of several hundreds of thousands of white men.”

On April 1st, 1913, there were in German South-West Africa 1,255 farms in private hands, with an area of 13,393,606 hectares, and the number of white male adults employed in farming was 1,587. Of these farms, 1,060 were occupied and 195 lay idle. The country had been devastated by the recent drought, and the climatic conditions in that year were most unfavourable to the industry. As a result, the crops, other than those under irrigation, were a total failure. The farmers, and consequently the majority of the merchants, were affected by protracted drought, which would have been felt more seriously had the railway lines not been completed. In spite of the railways it would have been a black year for the whole of the colony if the Land Bank had not been sanctioned. The prospects of relief from the financial strain of the last few years kept hope alive, and enabled the merchants to carry over the trying period, when money was scarce and dear in Germany, and the farmers, instead of reducing their outstandings, were compelled to ask for an extension of credit. It was only the impending introduction of new capital that induced creditor and debtor to carry on until the establishment of a Land Bank with a capital of £500,000 would bring relief.

Although the Land Bank will pass away with the passing of German rule in South-West Africa, it is interesting to review its constitution and ascertain what the Government intended to do on behalf of the farming and agricultural community. The

object of the bank was to supply the farmer with capital at a reasonable rate of interest under a bond that could not be called up as long as the interest and other charges were duly paid, and which provided easy terms for the repayment of the principal. The rate of interest was fixed at 6 per cent., and the repayment of the principal sum was to be made by means of annual instalments amounting to $1\frac{1}{2}$ per cent. of the total sum advanced. This compared very favourably with the rate of interest then ruling, which was 8 per cent. or more, under a bond which might be called up on short notice.

Under its regulations the bank was only to be permitted to make advances equal to half the estimated value of the property offered by way of security, but some farmers were already indebted for a greater amount than the bank could advance. Unless special provision was made, such persons would not be able to obtain any assistance from the bank. But as it happened they were so numerous that they had to be brought within the sphere of the bank's operations if the country as a whole was to prosper, and it was proposed to overcome the difficulty in the following manner. The holders of existing mortgages were to be invited to confer with the Land Bank and the debtor, and asked to agree that advances made by the bank should rank as a first mortgage.

On the other hand, the bank was to undertake that if a second or later mortgagee should be compelled to buy in the property in order to protect his claim, in the event of the bankruptcy of the debtor,

the bank was to allow the purchaser to step into the place of the debtor with regard to the loan made by the bank, and allow him the same conditions as to interest and repayment as were granted to the original debtor. It was anticipated that no practical difficulties would hinder the adoption of this plan, as the position of existing creditors would be bettered rather than damaged if an agreement was arrived at.

If the farmer was enabled to liquidate the whole or part of his indebtedness to the merchant, it would have the effect of reducing the burden which he had to bear and at the same time relax the strain upon the merchant's credit, for which relief both parties would breathe more freely. Business generally would be placed upon a sounder basis by the separation of the functions of merchant and banker.

The bank was also to provide fresh capital for increasing the productivity of the farms. Where money was advanced for the purpose of effecting improvements it was to be paid over to the farmer in instalments, the amount of which would depend upon the actual progress of approved works. The increased value of the farm would be the security for the advances made. The farmer would thus be able to equip his farm so as to yield the best results, and it was hoped that the industry would enter upon a period of rapid and continuous expansion.

When all the money, for which real security was provided, had been borrowed, further sums would have to be provided from time to time, the lack of which might seriously jeopardise the position of the

farmer. Payments might fall due at a time when the farmer was unable to realise his produce to advantage, and a little ready cash might make a considerable difference to him. In order to meet this want the Land Bank decided to foster the establishment of co-operative societies for the sale of produce, the purchase of certain articles in bulk, and the provision of personal credit on the joint security of the members of such societies to the amount of the share capital subscribed by them.

During 1913 the veldt, for the greater part of the year, was in a wretched condition owing to drought, but the stock withstood the effects of a disastrous season in quite a remarkable manner. The number of animals increased at a faster rate than the population, and the prices at the end of the year were somewhat better than at the beginning. The drought had some influence upon the upward trend, while the market was relieved by the supply of meat to the steamers that call at the ports, and to the whaling station in Walfisch Bay. During the first six months of the year the value of the meat thus disposed of amounted to £3,630. Sheep and goats were once more permitted to enter the Union of South Africa, which took close on to 30,000 small stock for slaughter purposes during 1913. This improved the market prospects and put fresh life into the southern districts of the Protectorate.

The number of cattle was 205,643, an increase of 33,859. This must be regarded as a satisfactory increase. There was very little sickness among the

cattle, tuberculosis being conspicuous by its complete absence. *Lammziekte* may have been a trifle worse in the Kalahari owing to the drought. Anthrax and *sponziekte* claimed a certain number of victims, but as farmers gain more experience in connection with these diseases it may be anticipated that they will abate. There was a small outbreak of lung sickness near the Etoscha Pan among cattle that had come down from Ovamboland. The whole herd was immediately slaughtered, and there was no recurrence of the disease.

During the year the Government imported a number of bulls and cows from Germany, both on its own behalf and on account of private persons, with the object of improving the cattle of the country. Breeding cows were in great demand, but as the import of cattle from the Union of South Africa was forbidden, and very few farmers in the German Protectorate had cows to sell, not many changed hands. Newcomers found it difficult to get enough cows together to make a start.

Woolled sheep numbered 53,691, an increase of only 6,790. A combination of drought and scab seems to be the reason for the relatively small increase. One farmer lost 4,000 sheep out of a total of 5,000. It was considered advisable to establish herds of pure-bred wool sheep in preference to crossing Afrikander sheep with pure-bred rams. Towards the end of the year, 1,400 high-class flock sheep arrived from Australia. They were purchased on account of various farmers. The farmers paid the

Australian cost price, which amounted to £2 2s. apiece, while the Government paid the cost of transport, which came to something like £4 10s. per head. The venture was so successful that it was decided to import a fresh lot.

The number of pure-bred Karakul sheep was 776, and the total of half-bred Karakuls increased to 10,418. With the experience that has been gained, it is expected that the increase of Karakul sheep will be more rapid in the future. It is said to be the hardiest sheep in the country, and the sample skins of half-bred animals which have been sent to Europe give promise of the establishment of a lucrative industry. Karakul sheep were first imported into the colony from their native Bokhara in 1907, being regarded as specially suited to the sandy soil. Since 1909 there has been a Government farm for the breeding of these sheep near Windhoek. The Karakul sheep has been crossed with the native African sheep with the most satisfactory results, and it is now understood, according to the information available at the Imperial Institute, that the industry is an established success, the sheep having found on the higher plateaux of German Damaraland and Namaqualand, climatic conditions not far removed from those of their original habitat. Prices as high as £2 or even more are obtained for an exceptionally good lamb skin, but the industry can, it is believed, be carried on at a profit if from 10s. to 15s. are realised per skin. Afrikander sheep in the colony in 1913 numbered 472,585, and Afrikander goats 485,401,

in addition to 13,340 Angora goats and 18,163 half-bred Angoras.

A very satisfactory increase of 2,576 in the number of horses in the colony in 1913 brought up the total to 15,916, while the quality of the animals continued to show an improvement. Mules and donkeys numbered 13,618.

Ostrich breeding promises to be a lucrative industry. Although the total number of birds is only 1,507, a number of first-class breeding chicks have been introduced from the Cape province, and the improved quality more than compensates for the reduced rate of increase in number. Chicks bred in the colony from good birds are beginning to fetch a fair price, but the expenses in connection with successful ostrich farming are so high that it only pays to keep the very best class of bird. The value of the feathers exported in the first six months of 1913 amounted to over £2,000.

GEOLOGY AND MINERALS

IN his remarks on the German geological map of German South-West Africa, Professor Schenk traces the formations which give the country its plateau-like character. These formations are steep and rocky, and overlie the primary mountains in a confused mass of horizontal layers of sandstone, schists and limestone of the Nama and the Karoo formations. In addition to these are recent sedimentary rocks which may have originated in the quartzite period, and which form the covering stratum to the older rocks in many places. The primary mountains of the South-West African table-land consist of gneiss and other crystalline schists, which are known as the South-African primary formation. Their ages in relation to each other and to other formations beyond Africa cannot be estimated, owing to the absence of fossils. It is assumed, however, that they correspond partly with the Carchaic and partly with the Palaeozoic formations of Europe. Four distinct formations are distinguishable—a gneiss formation, a gneiss and schist formation, a schist formation, and a loadstone formation. The gneiss formation is widely extended over South-West Africa. It is composed of coarse-veined gneisses and granite gneiss, some amphibolites and, here and there, crystalline limestone, and is intersected by huge masses of

intrusive granite. In the north this formation extends from Angola across the Cunene to Kaoko-land. It gains in breadth further south, and in Damaraland it stretches furthest east to the region of the tributaries of the Ngami basin.

In Great Namaqualand almost the whole of the desert coast country, to a width of from 80 to 150 km., is composed of rocks of this formation. It also appears in the valleys of the Huib Plateau under the Nama strata and, in a few places, outcrops through it. It is also to be seen in the Little and Great Karas Mountains, covered, in the former, by recent strata, and edged by them in the latter. In the Orange district the gneiss formation extends towards the east as far as the frontier of the Protectorate. In the centre of the country, on the boundary between Damaraland and Great Namaqualand, Komasschists, which also belong to the South African primary formation, take the place of the gneiss formation. There are fine-veined gneisses, micaceous and other crystalline schists and enormous masses of quartzite. The Komasschists extend from the central Kuiseb to the east of Windhoek, and form the Komasshighlands, the Auas Mountains and the Onjati Mountains. The rocks which extend in a broad tract, 40 km. wide, towards the coast on both sides of the estuary of the Orange River, and northwards as far as Sinclair Island, are somewhat different from the Komasschists, being grey schists with strata of siliceous schists, quartzites and light-blue crystalline limestone. Passarge found in various places in the

Kalahari, especially in Chansefeld, steep reddish to grey loadstone—chansewacke—which he includes in the primary formation.

Following the line of the railway from Luderitzbucht to Keetmanshoop, one enters the table-mountain region east of Auas. Between Auas and Bethanien the Huib Plateau is deeply intersected by valleys. Here, overlaying gneiss and granite, are flat stratified table-lands of the Nama formation, close to the Huib strata formed by conglomerates and quartzite sandstones covered by blue-black dolomite-limestone—the Otavi limestone.

East of Bethanien rises the Hanami Plateau, formed, in the west, of green schists and bright-coloured sandstones. In the east, towards the Fish River, these are covered by masses of reddish schists and red-coloured quartzites—known as the Fish River schists. These schists—the green schists and sandstones as well as the red schists and quartzite—are classed as Hanami schists, as the limit of the upper and lower division is not yet defined. As the Otavi limestone on the western edge of the Hanami Plateau is also covered with green schists and sandstones, as well as with red-coloured Fish River schists, it is also taken as belonging to the Hanami schists.

Whereas isolated masses of sandstone, west of Rehoboth on the Gansberg and in the Kaokofeld as far as the Cunene, may be included in the Huib sandstones, red sandstone, belonging to the Fish River schists and overlaying the Otavi limestone,

appear in a few places on the Waterberg in North Damaraland. The Otavi limestone is most extended in the neighbourhood of Otavi, whence it stretches westwards, and also occurs in isolated masses in the Kaokofeld and in West Damaraland, where it lies partly directly above the granite and partly upon conglomerates and the quartzites of the Huib schists. In the Kalahari, Passarge's Ngami schists may correspond with the Nama formation.

Dr. Paul Range, in a paper read before the Geological Society of South Africa in 1914, made the following remarks upon the geology of German South-West Africa :—" Studt believes that Passarge's Maseganite formation and Wagner's Inselberg Series represent the Swazi System in Damaraland. I should rather like to correlate them with the Ventersdorp System, while Wagner is of opinion that some of the conglomerates may represent the Banket of the Witwatersrand. From other parts of the country I have never seen conglomerates resembling those of the Witwatersrand, and I believe also that Kuntz would have observed them if they existed in the Kaokofeld, the north-western part of the German Colony, about which he and Krause lately gave valuable geological information. Voit, in 1904, divided the crystalline coastal belt of Damaraland into three horizons, as follows: (1) A granite gneiss zone; (2) a gneiss-schist zone; (3) a schist zone. Corresponding with his observations, I divided the 'Primär' formation of Great Namaqualand also into these three horizons. I may state that they

are only of value till we have more detailed observations and are able to classify that formation better. The upper division of the Transvaal System exists also in German Namaqualand, and is represented by the Schwarzrand series, which consists of conglomerates, grits, gray and green sandstones and black shales ; they are well developed in the district of Maltahöhe. Further south in Little Namaqualand—where I stayed in April, 1913, and had a look over the country under the guidance of Dr. Rogers—the Steinkopf beds correspond with the ' Kuibisschists ' in Great Namaqualand. Their correlation with the formations farther south is given by Rogers in his paper, ' The Nama System.' To correct my geological map of 1912, I may add that the Karoo formation extends to the Orange River at Velloer Drift and Aussenkehr. As mentioned before, Kuntz investigated the Kaokofeld in 1910 and 1911, and noticed large sheets of amygdaloidal diabase and similar volcanic rocks underlain by soft gray and yellow sandstones ; the complex is named Kaoko formation according to Gürich. Although Kuntz did not observe typical Dwyka conglomerate, he believes that the sandstones belong to the Karoo formation, and that seems very probable. So far as I know, the glacial conglomerate thins out near Kubub in Great Namaqualand (Bezirk Gibeon). South of that place I observed it only a few feet thick ; there it is overlain by a large sheet of amygdaloidal melaphyre, stretching to the east into the Kalahari. Rimann observed the higher horizons of the Karoo

formation in the Gobabis district on the Nossob and near Aminuis, represented by a sheet of diabase underlain by black shales. According to the observations of recent years, the northern border of the Nama formation is given by the Nawkluft, Tsennis and Okasewa east of Windhoek. I believe that great parts of the 'Sandfeld' north-east of Windhoek are also underlain by Nama formation. In Hereroland only some elevated mountains are capped by this formation. Cloos observed in the Erongo, north of Karibib, quartzites probably corresponding with the Kuibis quartzites, overlain by amygdaloidal melaphyre and said volcanic rocks, such as porphyry, porphyrites and tuffs. That author also observed a younger granite on the southern side of the Erongo, besides the well-developed older granite, the latter with pegmatitic veins containing cassiterite, discovered in 1909, and since worked with more or less success. Farther north the Nama formation covers the Otavi Mountains, the Waterberg Plateau, and a great part of the Kaokofeld, chiefly developed as Otavi-dolomite and Kuibis-quartzite. The fossils of the Otavi-dolomite are pseudo-fossils, as Gürich states, so that we have no palæontological evidence for the age of the Nama formation. I believe that great parts of the Ovamboland and the north-eastern Sandfeld are also underlain by horizons of the Nama formation and perhaps of the Karoo formation, and that the sand of this immense tract of country takes its origin from the sandstone horizons of these formations. Wagner mentions outcrops of Botletle series

on the Okavango. Older rocks exist on the south of the Okavango near Andara, and on the Zambesi at Katima Molilo and Kasungula, but it is not yet quite clear to what formation they belong. The younger formation in the coastal belt of Luderitzland is not of cretaceous age. The determinations of Merensky are not confirmed by newer investigations, which give clear evidence that the sandstones, clays and conglomerates of Bogenfels belong to the middle Tertiary; quite the same results were obtained by Schwarz concerning his Alexandra formation. If I add that in 1911 I discovered a series of porphyries, porphyrites, tuffs, and conglomerates underlying the Nama formation and overlying the primary formation with breaks, in the districts of Maltahöhe and Bethanien, in Namaqualand, stretching from latitude 24° to 26° in a long strip on the 16° of longitude, which I named Konkip formation, and correlated with the Ventersdorp system of the Transvaal, the sequence of the strata in German South-West Africa compared with other parts of South Africa may now be shown as follows :—

<i>German South-West Africa.</i>		<i>British South Africa.</i>
Kalahari Surface Deposits ..	}	Kalahari System.
Botletle Beds		
Middle Tertiary of Luderitzland		Alexandra Formation.
Karoo Formation		Karoo Formation.
Nama Formation	{	Waterberg System.
Konkip Formation		Transvaal System.
Ventersdorp System		Ventersdorp System.
Primary Formation		Primary Formation."

In 1681 the Hottentots brought pieces of copper ore, which they declared they had broken off in their native mountains, to the Boer Governor, Simon van der Steel, who, four years later, explored and reached the copper mountains of Little Namaqualand. Eighty years later white men crossed the Orange River and embarked upon the first economic enterprise of German South-West Africa. In 1760 Captain Hendrik Hop, commanding a party of Boer Cape Militia, penetrated Great Namaqualand, and returned with the news that rich copper was to be found there. In 1791 another party of Boer prospectors, who went to search for gold, returned with the news that there was copper in the Namib. In 1793 another party landed at Possession Island, Angra Pequena and Walfisch Bay, and more copper was found, but not gold, as was expected. Mining began to develop in earnest in 1850. These first efforts to penetrate South-West Africa are of interest, as showing that they were undertaken with a view to mining.

The export of copper in the first half of 1913 to the value of £156,106—as against £118,228 in 1912—makes copper mining, after diamonds, the most important mineral industry in the Protectorate. The best known copper mines now working are the Otavi Mines in North Hereroland, the Pot Mine on an island in the middle course of the Swakop, the Matchless Mine on the Komass Highlands west of Windhoek, and the Hope and Gorob Mines in the Namib.

The Otavi Mining and Railway Company is still

the colony's principal exporter of copper, and the following particulars, derived from the British Consular Report, give a comprehensive idea of the progress of the industry. During the year ended March 31st, 1913, the Otavi Company mined 54,000 tons and shipped 44,500 tons, with an average of 13 per cent. copper, 25 per cent. lead, and 230 grammes of silver per ton. During the same period 665 tons of copper matte, containing 48 per cent. of copper, 25 per cent. of lead, and 400 grammes of silver per ton were shipped, as well as 400 tons of crude lead, containing 98 per cent. of lead and 910 grammes of silver per ton. The reduced ratio of lead to copper shipped is explained by the fact that a considerable amount of galena, which was formerly used in the process of smelting, was sold at a good price, and iron pyrites substituted in its place.

The rate of shipment was accelerated during the six months ended September 30th, 1913; 25,660 tons of copper, 507 tons of copper matte and 45 tons of crude lead being exported. The prospects of the company have been improved as the result of development work. The continuity of the ore to greater depths in the Tsumeb Mine has been proved. It has also been ascertained that the copper ores in the Otavi Valley, which contribute some 2,000 tons to the total shipped by the company, belong to the same formation as the Tsumeb occurrence. The strike of the pockets is along a line of weakness forming an ore-bearing zone in the surrounding dolomitic country rock. The formation makes the company hope that

the Otavi Valley mines will prove payable to greater depths, and that fresh mines may be opened up in the zone between the Otavi Valley and Tsumeb and west of that place.

Working costs were reduced from £1 3s. to £1 per ton in the Tsumeb Mine. A tandem hoisting engine and an electric alternate plant, driven by a Diesel motor, were added to the equipment of the mine. Successful experiments with a new method of treating the eruptive rocks, in which some copper ore also is contained, by wet mechanical process, were carried out in Germany. An installation capable of treating 50 tons per diem, and combined with an up-to-date sorting plant, has been ordered.

The Otavi Exploring Syndicate, which is engaged in development work, and the Otjozongati Mine also shipped a small quantity of copper ore during 1913.

Development work has been resumed in the Henderson Mine in the Khan Valley, the Ida Mine near Huseb, and the Sinclair Mine in the Maltahöhe district. The Khan Copper Mine has been opened up along a length of 1,200 feet and to a depth of 690 feet. The reef is a little over 6 feet in width and contains from 7 to 8 per cent. of copper. There is a junction line from the Otavi Railway to the mine, which is equipped with a main engine (fuel, crude oils) driving a central electric plant capable of developing 560 horse-power. The concentration plant was to have been ready in April, 1914, when the mine was expected to become a factor in the German South-West African copper mining industry.

New discoveries, which promise well, have been made in the Bobos Mountains in the Tsumeb district and on the farm at Okatumba West in the Windhoek district.

According to Professor Dowe, the Kaokoland copper ore belongs to the same zone as British Little Namaqualand. Its occurrence has been known for some time, and it has been worked in some places. The occurrence of copper ore is connected with seams of other ores that intersect the gneiss. The most usual form of the occurrence is known throughout the whole of South Africa as a "nest." Although many experts ridicule the theory that the ore occurs in this form only, it does not follow, if correct, that these "nests" contain only small quantities of ore. The celebrated copper mines of Ookiep, in Cape Colony, are, according to Schunk, only "nests," and many "nests" of considerable extent have been found in the Protectorate.

The general features of the ore "finds" in Damaraland and the neighbouring districts have been theoretically connected by Dr. Schultze as follows: The copper ores originally equally distributed throughout the crystalline schists—the origin of which is uncertain—were dissolved by the circulation of water and set in motion. Cracks in the crust of the earth decided the formation of these ore-strata. Quartz seams and lenticular deposits filled the cracks; mineral solutions trickled into them and deposited their ores. Denudation of the impregnated rock and oxydation gave rise to further

changes of form in the upper strata. General though this description may be, it presents the deposits of Damaraland—so varied individually—in a clearer light.

The existence of gold in South-West Africa has been proved at a number of places, but whether it occurs in sufficient quantities to justify mining is a question to which no definite answer can yet be given. At times active prospecting work was proceeding on the extensive auriferous and argentiferous quartz lodes at Kunjas (about 110 km. north of Auas), where 206 precious metal claims were pegged out. Near Zwartmodder, in the Rehoboth district, prospecting for gold was started on claims selected by the Deutsche Kolonial Gesellschaft, and nuggets have been found in the alluvial of the Neineis Tinfields. No systematic development work, however, has been done on the Kunjas claims, and hopes have been so often raised and disappointed in connection with gold discoveries in the Protectorate that there is a tendency to become sceptical about the prospects. Dr. Karl Dowe makes the confident, if cautious, assumption that the composition of the South-West African rocks can hardly be as rich in gold as those on the eastern side of South Africa; but he agrees with Schenk that the gold-bearing rocks are connected with the strata in which the copper of the country is found. If richer gold-bearing lodes should be discovered, Professor Dowe declares, one thing must be emphasized, and that is the probable absence of that form of occurrence in which the metal

can be most easily extracted from the ground, i.e., extensive washing-fields. "In a country where the rivers rush rapidly to the coast, bearing with them masses of decomposed rock from the higher mountains," he writes, "extended and rich gold strata can hardly be counted upon. That these have been found, small in size, and in isolated places, cannot be denied. A little river gold was actually found, for instance, in the bed of the estuary of the Swakop River in 1892. But a few months after the discovery was made, a thorough examination of the place proved that the strong current then running had washed the whole gold-bearing sandbank down to the sea. If gold-bearing sands such as these can be counted upon, they must be limited especially to the western area of the colony; for the further one proceeds eastwards, and meets with considerable tracts of disintegrated soft soil, the deeper must they lie below the surface.

"The expense of extracting ore from the primary rock makes it impossible for poor, individual miners to attempt it; only companies with large capital at their command, such as those of the Transvaal, can work such mines. The opening up of gold mines would give as great an impetus to the prosperity of the country as did the discovery of diamonds. I agree with von Bulow and others that there is more probability of their being discovered by granting a number of prospecting rights to a number of more or less experienced diggers than by forming one big exploratory expedition."

In February of the present year the *Deutsche Sudwest-Afrikanische Zeitung* announced that in the stanniferous Neineis district some finds of gold, including several nuggets as large as walnuts, had been made. Great importance was said to attach to these discoveries locally, and a number of tin areas were converted into gold claims and worked as such. Up to the present the announcement lacks official confirmation.

The tin discoveries in the colony have not yet led to the establishment of an important industry, although during the first six months of 1913, 101 tons of concentrated tin ore, valued at £16,340, were exported. The tin was obtained from alluvial ground, found in the neighbourhood of outcrops of pegmatite and quartz, which are a frequent occurrence in the hinterland of Swakopmund. A considerable amount of money has been sunk in examining these reefs, and it has been found, so far, that the tin content is too irregular and patchy to be payable. Attention has therefore been concentrated upon the alluvial deposits, which are found in a good many places, and promise to form a steady source of profit for some years to come. Lode tin has been produced in small quantities by the Anglo-German Tins, Limited, on their Etemba claims. The crude ore, averaging 66 per cent., was reduced by hand separation to concentrates and slimes containing from 60 to 69 per cent. metallic tin. The erection of a reduction plant with a capacity of 100 tons daily, estimated to cost 200,000 marks, was started in

October, 1912, but no reports of the progress of the work have been published.

The latest information respecting the Anglo-German Tin venture, contained in the Directors' Report, issued in July, 1914, is not particularly satisfactory. It appears that the shareholders, having declined to subscribe further capital to provide for the company's pressing liabilities, resolved to abandon all the original Dawib claims and to leave the matter of the offer to tribute in the hands of the directors to make the best arrangement possible. A tributing agreement was accordingly entered into with William Weber, the consideration being the payment by the tributors of all the company's outstanding liabilities in German South-West Africa at the end of the year, plus payment of the German Government royalty of 2 per cent. and a tributing royalty to the company of $7\frac{1}{2}$ per cent. on the proceeds of all tin sold as returned by the smelters in Europe. This agreement is still in force, and the tributors are actively working the claims. Advices show that 23 tons of concentrates were shipped in February and March, 1914, whilst at the end of May a further nine tons was bagged ready for shipment, but this was held against an anticipated rise in the price of tin.

DIAMONDS AND THE DIAMOND INDUSTRY

THE SOUTHERN DIAMOND FIELDS

THE progress made in German South-West Africa during the last few years would have been impossible had it not been for the discovery of the diamond fields in 1908. When Luderitz built his factories at Angra Pequena, and two years later secured the protection of the Imperial Government for them, he based his hopes on mining enterprise. He even had diamond washing carried on in the Orange River. But the fact that he sought for treasures which lay in quantities at a short distance inland in the sands of the desert did not enter anyone's head. Many times he and his men explored the Namib without discovering the wealth hidden at their very feet.

Persistent rumours of the finding of single diamonds in the Gibeon district, in which the occurrence of blueground pipes were well known, led in 1903 to the founding of a German company which succeeded in obtaining a concession for the systematic prospecting of the Gibeon and Berseba region. These operations met with no success, and in 1910 the enterprise was abandoned. Meantime, further rumours spoke of the existence of minerals in the coast area between the Orange River and Luderitz-bucht. In 1905 and 1906 guano workers on the English coast islands were said to have found

diamonds. It was at this time that the English "expeditionary" ship—the *Xema*—appeared off the coast for the purposes of exploration, but although the expedition landed and explored various places on the mainland, the enterprise met with no success. Thereafter all expectation of finding diamonds in the colony was abandoned until the spring of 1908, when an incredulous world learnt that not only had rich discoveries been made, but that the first stones had been found in a district which, in consequence of Hottentot risings and railway construction, had been traversed by hundreds of soldiers and railway employees. The discovery was actually made in April, 1908, by a Cape "boy," a former employee of the De Beers Company, who, while working on the railway line in the vicinity of Kolmanskop, picked up several stones, which he at once recognised to be diamonds. The stones eventually got into the hands of a railway official of the name of Stauch, who has been described by Dr. Meyer as the "intellectual discoverer" of the Luderitzbucht diamond fields.

In 1907 August Stauch was appointed railway superintendent on the Luderitz-Auas Railway, and was responsible for keeping the line clear of sand in the dune region. In the course of his duties he realised the possibility of discovering valuable minerals, both in the primary rocks that rose to the surface, and in the conglomerates which partly covered great areas. The desert between the 12 and 17 kms. of the railway is of peculiar interest to the traveller. It consists chiefly of flugsand intermixed

with micaceous laminae, and particles of quartz worn away by the wind from 3 to 4 mm. in thickness, rock crystal, agates, ferruginous quartz, and magnetic iron ore. Not only the uninitiated, but men of science were struck by the unusual appearance of this sand, and were incited to examine it. Dr. Lodz, the geologist, who was stationed at Luderitz Bay during the rising, sent samples of the sand to Geissen for examination after the actual discovery of diamonds at Luderitzbucht, but no traces of diamonds were found in it.

Stauch was sufficiently optimistic to procure two prospecting licences and to instruct the native navvies to bring him any curious or unfamiliar stones they happened upon in the course of their work on the railway line. The natives laughed at the idea of diamonds being found, but some of them seem to have kept a sharp look-out, and a fortnight after the order was issued the first Luderitzbucht stone was discovered.

Stauch immediately pegged out claims, and set himself to discover the origin of the stones; it was not to be supposed that the existence of a solitary diamond justified the prospect of profitable mining operations. He knew that the sands are always shifted by the regular and violent sandstorm which rages in October in the prevailing direction of the wind from south to north, and he prospected the district in a southerly direction. On the strength of another licence, obtained from the Deutsche Kolonial Gesellschaft, he laid out as a claim a tract of country

about 3 km. broad, commencing 2 km. north of the railway, to the spot about 7 km. south of the railway where the original stone had been discovered amongst the decomposed rubble. He camped out on his claim, and quickly realised that it was quite possible for diamonds to occur in the masses of sand in the valleys, independently of the existence of blue ground. In Luderitzbucht the news was received with the utmost scepticism, and Stauch was ridiculed as a dreamer. On the 20th June, 1908, he arrived in Swakopmund, and showed his find—in accordance with the prospecting regulations—to Dr. Range, the Government geologist, who confirmed the opinion of the Cape "boy" and the lucky railway official.

This confirmation was followed by a great rush on the part of the inhabitants of Luderitzbucht to participate in the wealth which had been literally spread out at their feet. In an incredibly short space of time all the ground open for pegging in the vicinity of Luderitz Bay had been taken up, and some of the bolder spirits now began to organise prospecting parties, which, in the face of enormous difficulties, explored the desert in all directions, and were rewarded by the discovery of exactly similar deposits in the littoral, both to the north and to the south of the area in which the original finds had been made. The search was subsequently taken up by large expeditions sent out by the various companies which had been formed to exploit the gravel occurrences, and within eighteen months of the date of discovery the whole of the dreaded coastal belt between

Walfisch Bay and the mouth of the Orange River had been more or less thoroughly prospected. Attempts were also made by an enterprising syndicate to dredge the sea-bottom off Elizabeth Bay and Pomona, until work of this nature was prohibited by an Imperial Decree, which vested all rights for the search of diamonds on the ocean floor in the Colonial Treasury.

In the meantime Stauch had not been idle, but had pushed south and pegged out a large claim as far as Elizabeth Bay. When he arrived at Elizabeth Bay his operations towards the south came to a standstill, as the diamondiferous ground seemed to have dived under the sea. In consequence of this he limited his efforts to general prospecting in the district bounded on the south by Elizabeth Bay ; on the north by the great shifting dunes ; on the west by the sea coast ; and on the east by the Elizabeth Mountains.

The diamond fever soon abated owing to the lack of transport, water and vegetation, and various prospecting companies, such as the Swakopmund-Schuerf Gesellschaft, the Keetmanshoop Diamanten Gesellschaft, &c., took the place of men from Luderitzbucht and Cape Colony. A remarkable event which took place at this time was the discovery by Klinghardt, of the Bogenfels Diamond Fields, in October, 1909, and the discovery of diamonds in the Pomona district, by Prof. Scheibe and Stauch. The former attracted attention owing to its great distance from the spot where the first

"find" was made, and the latter because of the enormous diamondiferous richness of the place, and the number of large-sized diamonds secured. Klinghardt, then employed by the Deutsche Kolonial Gesellschaft, recollected having seen a peculiar gravel formation on the Kubub Farm, which he had formerly managed, and he subsequently succeeded in inducing his chief to form a camel corps and to prospect the country. Klinghardt started from Kubub, and passing through Kaokausib in the direction of the Bogenfels, ascertained that the diamondiferous deposit extended into the Bogenfels district. Later discoveries confirmed the fact that it stretches even further south, and the last spot where diamonds were discovered by Stauch and Professor Scheibe, of the Mining Academy of Berlin, is in the vicinity of Sinclair Island, about 150 km. south of Luderitzbucht.

Dr. Percy A. Wagner in his *Diamond Fields of South Africa*, from which the following description is largely derived, writes that the diamondiferous deposits, hitherto located within the littoral of German South-West Africa, extend intermittently from Conception Bay, latitude S. 24 deg., to Angras Juntas, latitude S. 28 deg., a distance as the crow flies of about 270 miles. In no portion of this tract of country have the gravels been found at a greater distance than 12 miles from the coast, which circumstance, coupled with the previously recorded occurrence of diamonds on Possession Island, renders it clear at the outset that the deposits must in some way stand related to the sea. Owing to the small

average weight of the diamonds which they yield, and their shallow and patchy nature, none of the extensive tracts of gravel between Luderitz Bay and Conception Bay have as yet proved worthy of exploitation, and this account concerns itself more particularly with the deposits situated to the east and south of Luderitz Bay.

Within the area under review, the rock-bound coast, swept by the powerful Benguela Current, rises rapidly from the sea, being in places bordered by precipitous cliffs up to 200 feet in height. Farther inland one finds broad naked ridges and isolated chains of hills, with a prevalent north-to-south trend, alternating with flat-bottomed valleys and hollows occupied by sand and detritus. To the east of Luderitz Bay there is a considerable depression which extends from Gallovidia Bay, some miles to the north of Luderitzbucht, to Elizabeth Bay; being traversed by the Keetmanshoop railway between kilometres 16 and 17. Within this depression and in a minor valley, by which—to the south of the railway—it is parallel on the east, are situated the important Kolmanskop, Stauch (Koloniale Bergbau Gesellschaft), and Fiskus claims. Forming the eastern boundary of these claims is a mighty belt of sand-dunes which stretches without a break from Elizabeth Bay to Walfisch Bay. To the north of Luderitz Bay the dunes extend almost in a straight line along the coast, and in several localities border directly on the sea. South of Elizabeth Bay, where a dry river bed coming from far inland enters the sea,

the country assumes a more rugged character, and in the Pomona area the diamondiferous deposits are confined to a number of persistent valleys hemmed in by steep-sided hills. The entire coastal belt, for a distance of about 80 miles inland, is to all intents and purposes a rainless desert, practically destitute of vegetation, and before the discovery of diamonds shunned by mankind. The principal agency of denudation is a violent south wind which blows with terrific force throughout the summer months, and has been largely instrumental in the formation of the diamondiferous gravels. Admirable illustrations of wind erosion are in evidence on every hand, and there are probably few regions on the face of the earth where this form of rock sculpture in all its various aspects can be better studied.

The geological formations entering into the structure of the area are as follows : Ancient gneisses and crystalline schists with intrusive granite ; ancient limestones, quartzites and phyllites with intrusive foyaite ; sandstones, grits, marls and clays of Tertiary age ; recent deposits and accumulations of sand and gravel. The ancient crystalline rocks, greatly in evidence on the Luderitz Bay fields, comprise gneiss, augen-gneiss, amphibolite and biotite schist, which have been extensively invaded by granite and are much veined with aplite, pegmatite and quartz. To the south of Prince of Wales' Bay the granitic and gneissoid complex is replaced by a series of limestones, quartzites, quartzitic conglomerates and phyllites which are also believed to be of pre-

Cambrian age. Intersecting these rocks to the south-east of Pomona is a huge intrusion of elaeolite syenite (foyaite), which is accompanied by satellitic dykes of tinguaita, camptonite and monchiquite; the syenite being admirably exposed in the so-called Granitberg. Throughout the littoral the strike of the ancient crystalline and sedimentary formations is approximately north-and-south, and to this circumstance, without doubt, the prevalent north-and-south trend of the principal surface features is due. Remnants of very much younger sedimentary rocks occur in different parts of the area. To the east and south-east of Bogenfels and at Buntfeldschuh they take the form of horizontal sandstones, marls, clays, and conglomerates. To the east of Elizabeth Bay there is a large outcrop of sandstone, capped by onyx limestone; and sandstones generally of a reddish colour also occur on the Stauch claims, to the south of Kolmanskop, and at the foot of the Nautilus Berg, near Luderitzbucht. The present distribution of these rocks clearly indicates that they must at one time have filled most of the depressions of the littoral, and there is direct evidence to show that the material, of which the diamondiferous deposits are composed, has been derived in considerable part from their disintegration—under the influence of desert weathering. The sandstones are of particular interest in this respect, for they are seen in places to consist largely of grains of agate and chalcedony—conspicuous constituents of the diamond-bearing gravel, and, according to Scheibe, they have

actually been proved to contain diamonds. With regard to the age of the beds, which are fossiliferous, no definite conclusion has as yet been reached. Merensky, as a result of his determination of gastropods found near Elizabeth Bay, has co-related the sandstones there exposed with the Umtamvuna Series of Pondoland (Upper Cretaceous). Professor Böhm, on the other hand, to whom fossils from the exposures to the east of Bogenfels were submitted, inclines to the view that these are of Middle Tertiary age. As yet the exact relationship in which the Elizabeth Bay sandstones stand to those at Bogenfels has not been determined, and it is quite possible that both Cretaceous and Tertiary rocks are represented. Still younger marine deposits in the form of shingle terraces and raised beaches are developed all along the coast, and attest to more recent upheavals.

The diamondiferous deposits are confined to certain valleys and depressions, their elevation ranging from a few feet above sea-level to over 500 feet on the Fiskus claims, to the south-east of Kolmanskop. The diamond occurs in a superficial bed or layer of variable thickness composed of from 60 to 80 per cent. of fine yellow sand and from 20 to 40 per cent. of coarse particles, ranging from 1 to 10 millimetres in diameter. The coarse material, derived partly from the destruction of the sandstones and partly from the disintegration of the ancient rocks of the basement system, is made up of rounded and faceted particles of milky quartz, white felspar, yellow chalcedony, banded agate, red jasper, red

garnet, epidote, magnetite, and specular iron, generally accompanied by fragments of granite and gneiss. The uppermost portion of the deposit, which as a rule has been lashed by the force of the wind into regular waves or miniature dunes, is always found to be composed entirely of the coarse material, the finer particles having all been blown away. This process of natural concentration proceeds continuously, the per centage of coarse particles being thereby steadily increased while the sand goes to swell the vast volume of the dunes. As a result of the same action, the diamonds scattered through the sand and gravel slowly find their way to the surface of the deposit and into the crests of the waves, where a considerable enrichment is invariably found to have taken place. In the Pomona area, and particularly in the celebrated Ida Tal, this concentration has proceeded to such an extent that not only the sand but most of the larger particles have been swept away, and there remains in places but a single layer of comparatively coarse and fabulously rich detritus, spread irregularly over the wind-scoured surface of the underlying limestone. Apart from the superficial enrichment, one frequently finds a considerable concentration of diamonds to have taken place on the windward side of obstacles, such as the outcrops of resistant dykes and quartz veins, which rise above the general level of the deposits; and also at the head of valleys facing the direction of the wind. The thickness of the diamond-bearing material does not as a rule exceed 3 or 4 inches, but in portions of the Kolmanskop

and Stauch claims it is as much as 8 metres. In sections afforded by these deeper workings one generally sees alternations of fine sand and gravel; some of the lower layers of gravel having apparently been enriched in the same manner, though not to the same extent, as the superficial portion of the deposit. The distribution of the diamond through the detritus is on the whole very irregular. On the Stauch and Fiskus claims there are persistent, well-defined strips of payable gravel, up to 350 metres in width, extending along the lowermost portions of the depressions in which the claims are situated. As a rule, however, one finds rich patches alternating with practically barren areas, sometimes of considerable extent; and in many instances the diamonds appear to be confined to narrow streaks or "runs." It is on this account an extremely difficult matter to assess, even approximately, the probable yield of any particular gravel deposit, and most estimates of this nature that have been made have proved quite incorrect. The diamond content of the gravel at present being worked on different sections of the field varies between wide limits. The highly concentrated detritus in the Ida Tal at Pomona yields up to 60 carats per cubic metre, and on the claims of the Deutsche Diamanten Gesellschaft, to the south of Pomona, there are also rich patches of gravel averaging 10 carats to the cubic metre. Such values, however, are quite unusual, and in most instances very much poorer material is being treated. On the Kolmanskop claims, for example, an average of 1,500

carats of diamonds was, during the year 1912, recovered per hectare of ground exploited. The average quantity of gravel obtained per hectare amounted to 3,886 cubic metres, and the average yield per cubic metre was therefore only .386 carat, equivalent to .175 carat per load.

In addition to its occurrence in the normal sand and gravel deposits, the diamond has also been found in peculiar terraces of shingle. The best illustration of a deposit of this nature is to be seen about a mile to the south of the Bogenfels camp, where a narrow crescent-shaped ridge of shingle—clearly of the nature of a “storm-beach”—stretches across what, at no very distant date, must have been a shallow tidal lagoon. The ridge, about 8 feet in height, is built up largely of flattened pebbles of chalcedony, jasper and agate, many of which show very little wear. The diamond appears to be practically confined to an agate layer near the base of the deposit.

It may be stated that the leading South African experts are agreed that the German South-West African diamonds are wholly unlike those of any known source of production—primary or alluvial—in British South Africa. This view is endorsed by the Antwerp and Amsterdam cutters, who maintain that the stones in their physical properties more closely resemble the product of the Brazilian fields. The quality, which is much the same throughout the littoral, is exceptionally good, which accounts for the fact that, notwithstanding their diminutive size, enormous numbers of these stones are absorbed by

the world's markets. As regards crystallization, rhombic dodecahedra, with somewhat rounded faces, predominate, though octahedra and octahedral (twins) are quite common, and cubes are also said to occur. Cleavage fragments are comparatively rare and bort almost entirely absent. Fully 85 per cent. of the stones are fit for cutting. In consequence of the violent attrition to which they have been subjected, many of the crystals show unmistakable signs of wear, but typically water-worn stones, such as are so common on the Vaal River Diggings, do not appear to occur. The diamond is found in all shades of colour, clear white crystals predominating. The following analysis of a parcel of 1,558 stones is particularly informative in this connection: Stones of clear white colour or with a slight yellow tinge, 819; stones of delicate yellow colour, 136; stones of lemon yellow, 87; stones of pale pink, 116; stones of dark red, 9; stones of bluish, 30; stones of greenish, 5; stones of blackish, 9; stones showing various colours, 68; stones showing impure and turbid shades, 62; cleavage fragments, white and pink, 217; total, 1,558. In weight the diamonds range from $\frac{1}{16}$ carat, and less, to 34 $\frac{1}{8}$ carats in the case of the largest stone hitherto found; the average for the claims at present worked being almost exactly $\frac{1}{8}$ carat. Considering the field as a whole, Dr. Wagner at first thought that it had been established that there was a steady increase in the average size of the diamonds as one proceeds from north to south, until the Pomona area is reached, but in the light of more

recent investigations by Dr. Karl Krause, he has abandoned his original opinion that there are three definite areas within which the diamonds attain a maximum average weight. To the south of Pomona there is again a falling off in this respect, as witness the following table, in which the weights of the largest stones hitherto found in the more important localities are also given :—

<i>Locality.</i>	<i>Average Weight (Carats).</i>	<i>Weight of Largest Stone (Carats).</i>
Conception Bay and Spencer Bay	$\frac{1}{10} - \frac{1}{12}$	1
Kolmanskop	$\frac{1}{8} - \frac{1}{9}$	$2\frac{3}{4}$
Stauch and Fiskus Claims ..	$\frac{1}{8} - \frac{1}{9}$	$3\frac{1}{2}$
Pomona	$\frac{1}{25} - \frac{1}{3}$	$34\frac{1}{2}$
Bogenfels	$\frac{1}{4} - \frac{1}{5}$	$17\frac{1}{4}$
Frohe Hoffnung	$\frac{1}{525}$	3
Angras Juntas	$\frac{1}{8} - \frac{1}{9}$	1

The distribution of diamonds in country running parallel to the sea from Pomona northwards to Spencer Bay has led to the supposition that the sea has either thrown them up or has left them behind when it receded from the land. Dr. Schultze regards it as possible that the blue-ground of the Kimberley district may yet be found in the Namib under the detritus of the desert. Another opinion is that when this blue-ground was destroyed long ago by the sea, its diamondiferous remained, and the older diabase were buried in the seas of the chalk age. Chalk strata occur in the south of the Namib at Buntfeldschuhkorn opposite Plumpudding Island and

Sinclair Island. It is thought that the diamonds from these deposits may have been carried by the action of storms into the sands of the desert. It has also been stated that diamonds may have been transported from the far off Vaal River ;—the Orange River conveying them to the sea, and that the Benguela Current washed them along the coast to where they now are.

Dr. Wagner deals with the four main theories that have been put forward with regard to the source of the gems, as follows. The first theory, tentatively advanced before the true nature of the deposits was properly understood, that the diamonds were released by weathering from the crystalline rocks of the basement system, has been definitely disproved by the entire absence of diamonds in the detritus derived exclusively from the destruction of the ancient rocks, which has been carefully tested all along the littoral. The second hypothesis, that the diamonds were derived from the denudation of the primary deposits of British South Africa, carried down to the sea by the Orange River and distributed along the coast by the agency of the Benguela Current, is effectually disposed of by the difference between the German diamonds and those of the Union of South Africa, as well as by the fact that no diamondiferous deposits exist between Angras Juntas and the mouth of the Orange River, or in the lower portion of the Orange River Valley. To the third view that the diamonds were carried down to the sea from sources believed to exist within the interior of

German South-West Africa, Dr. Wagner advances several serious objections. In the first place, as is now definitely known, the diamondiferous areas are confined to the immediate vicinity of the coast, and no alluvial deposits have, as yet, been discovered away from the littoral. In the second place, the various dry-river beds coming from the interior have so far failed to yield a single diamond. Thirdly, river-worn diamonds appear to be entirely absent in the German South-West African products. In this connection we have also the important testimony afforded by the grains of agate, by which the diamond is invariably accompanied. The constant association of the diamond with small grains of agate is one of the most striking features in connection with these remarkable deposits. It is more than likely that this association may be purely accidental, but in view of the fact that there is a fairly close relationship between the average size of the diamonds and the size of the agates occurring on any particular section of the field, it is quite evident that these minerals have been derived from the same locality and distributed by the same agencies. The agates are accepted as representing the siliceous amygdalates of a vesicular rock. No rock of this description is known to occur in the littoral or in the interior, but agates are being cast up along the coast at the present day, and there can, therefore, be no question as to their submarine origin.

The fourth theory, that the parent rock of the diamonds lies submerged off the present coast is the

one to which the facts appear, in Dr. Wagner's opinion, to lend themselves most readily. It has already been pointed out that the diamonds attain a maximum average weight in the Pomona area, and this circumstance clearly indicates that the centre from which the gems were distributed is situated in closer proximity to Pomona than to any other section of the field. Dr. Wagner is thus led to conclude that the German diamonds have been derived from a primary deposit or deposits, which now lie buried beneath the sea somewhere off Pomona. On the supposition that the stones shed from the deposit were spread along the littoral by a powerful northward ocean current, similar to the one by which the coast is now swept, at a time when the littoral was still submerged, and thus found their way into the sediments there accumulating, all the previously recorded phenomena could be satisfactorily explained, with the exception of the decrease in average weight to the south of Pomona, and this might be accounted for by postulating a temporary reversal in the direction of the current.

The methods adopted for testing the payability of a likely looking patch of gravel are simple in the extreme. In the first place a number of natives are set "picking," that is, crawling over the deposits on all fours collecting such diamonds as they find on the surface. The uppermost layer of gravel has invariably been enriched by natural concentration, and should the "picking" fail to yield fair numbers of diamonds, it is concluded that the material is too

poor to repay exploitation. In the case of very shallow layers of gravel this is the only method of sampling resorted to, but if the results of the "picking" have been at all favourable, it is supplemented by further testing work. This generally takes the form of digging trenches, about a metre in width, right across the deposit, and carefully washing the excavated material. Owing to the sporadic distribution of the diamond through the gravel, such test washings, except where the trenches are fairly closely spaced, are apt to prove misleading, and estimates based upon them have in many instances proved quite erroneous.

The mining and dressing operations are equally simple. The usual practice is to excavate the gravel by hand, using ordinary shovels, and then to screen it by means of swinging sieves or trommels with a view to eliminating the fine sand and of obtaining a sized product for concentration. The screened gravel was originally hand-jigged and gravitated in small circular sieves, or treated in hand-operated movable sieve-jigs. It was found, however, that the loss of diamonds by either of these methods amounted to from 30 to 40 per cent., and they were, on this account, completely superseded by treatment in central plants equipped with mechanically-operated concentrating devices.

The exploitation of the detrital deposits at the outbreak of the war was practically in the hands of six large companies, the output of the several smaller companies being quite insignificant. In 1910 an

agreement was entered into between the Government and the Deutsche Diamanten Gesellschaft to the effect that prospecting for minerals in the area known as the Sperr Gebiet would, from and after April 1st, 1911, be reserved to a company with a capital of £30,000, to be held in equal shares by the contracting parties. The Government share, £15,000, was provided in supplementary estimates for 1913. The company was to be known as the Halbscheid Gesellschaft, and was to confine itself to prospecting work so as not to complicate the problem of the diamond market.

The Vereinigte Diamant Minen possess claims north of the local harbour, which are situated at the base of a chain of sand dunes. The gravel is contained in strata of soft conglomerate, which are overlaid by thick masses of dead sand. The sand has been successfully removed in places by a bucket dredger, which is now engaged in loading the gravel into trucks which are hauled up to a washing plant—the first large plant to be erected on these fields, and quite unique in its way. The Kolmanskop Company have erected a similar but improved dredger to excavate beds of gravel, which are in places over 20 feet deep. Under favourable weather conditions the dredger should be able to deal with about 160 loads per diem, enabling inferior grade gravel to be worked at a profit. The washing is done in three Schiechel plants, which are fitted with up-to-date improvements. The site of each plant was determined by the surface configuration of the property.

The Koloniale Bergbau Gesellschaft have a large block of claims situated in a wide, low valley, all parts of which are easily accessible. It has all but completed a large central plant, capable of dealing with 3,000 loads per diem. The plan is to strip all the gravel, including that which has already been washed, from the rock floor of the valley and to treat it in the central plant. Where the deposit is deep enough, an electric "navvy," that can scoop up four loads at a time, will be employed to load trucks of equal capacity, which will be drawn by an electrically-driven locomotive to a tip station, to be automatically emptied into buckets travelling on an aerial gear. The gear communicates with the top floor of a four-storeyed crushing house. Three storeys are occupied by crushing machines of three grades, the coarsest above and the finest below. The finer gravel is sent direct to the bottom of the building without passing through the crushers. The next quality goes to the lowest crusher, the medium to the crusher on the second floor, while the coarse conglomerate is reduced in size by the uppermost crusher, and transmitted to the floors below, where the process is repeated. At the bottom of the building the gravel, reduced to the requisite size, drops upon an endless concave belt, which conveys it to the bunkers. The bunker capacity will be sufficient to keep the washing plant running for a day and a half in case a stoppage occurs in the operations just described. From the bunkers the gravel will be carried to the main washing plant, where, after the

elimination of the sand by means of trommels and *spitzkasten*, the material will be sized and deposited on the ground floor in large reservoirs. The pure gravel from the reservoirs will be treated on Harz jigs and Schiechel pulsators. The concentrates, after subjection to a wet magnetic process for the separation of iron ore, will be transmitted to the sorting room, where the diamonds will be handpicked out of the residue. It is hoped that the large plant will reduce working costs and replace hand labour, which can be beneficially employed elsewhere. Very few persons will be brought into contact with the diamonds, and the leakage, through theft, which is said to be considerable, will be practically stopped. A similar plant, with half the capacity of the above, and somewhat different in detail, was under construction on the Government block of claims, which are worked by the Koloniale Bergbau Gesellschaft under contract.

Rains, which seldom fall, and the more frequent fogs and heavy dews seriously handicap the work on the diamond fields. The salty soil cakes and gets sticky, clogging the sieves which separate the soil from the gravel. Much time is wasted waiting for it to dry: 1913 was a particularly bad year in this respect. Usually the damp only penetrates to a depth of 15 to 20 inches at most, but in 1913 a thickness of 10 feet was moistened. The Koloniale Bergbau Gesellschaft plant has been designed to treat wet gravel, and introduces a revolution into local methods.

Away from the railway ambitious schemes have been out of the question, owing to the cost of transport. The Deutsche Diamanten Gesellschaft, whose principal claims lie south of Prince of Wales' Bay, has had to overcome great difficulties. Goods were transported by sea and landed in a poor harbour at great cost. A railway was constructed from Kolmanskop to Bogenfels, a distance of sixty-six miles, during 1913. It runs through diamondiferous country practically all the way, and will facilitate the exploitation of the Deutsche Diamanten Gesellschaft claims, as well as many which it passes *en route*. The Pomona mine is traversed by the line, and will appreciate the benefit thereof when the inevitable day comes when more labour and machinery will be required to maintain a dwindling output. The locomotives employed on the line will be driven by electricity generated on the engines themselves, with benzol as fuel.

The Luderitzbucht electric works extended their premises during 1913 and doubled the amount of power generated. Contracts have been entered into with the Vereinigte Diamanten Minen, Kolmanskop, Limited, and Koloniale Bergbau Gesellschaft to supply them with all the current needed for motor power on their claims. The company provides the lighting for Luderitzbucht and Kolmanskop. Several workshops, as well as the Luderitzbucht wireless station and the Elizabeth Bay pumping plant, are supplied with electricity.

When machinery was less efficient it was necessary

to select the richer deposits for working, and the gravel had to be washed repeatedly before the diamonds were all extracted. It was difficult to state whether any particular area had been finally dealt with. Now that the good can be taken with the bad, and diamonds can be extracted without leaving more than a negligible percentage in the tailings, it will be possible to place on record how many acres are exhausted annually, and to base estimates of future output on more reliable data. A considerable acreage was finally dealt with in 1913, while on the other hand areas formerly considered unworkable have been added to the list of profitable propositions.

One of the great problems by which the engineers on the diamond fields were originally faced was the question of obtaining an adequate supply of water for treatment and domestic purposes, but by putting down shallow wells at likely spots, moderate supplies have in many instances been obtained. The water is brackish and unfit for human consumption, but animals soon get used to it. Most of these wells were drawn upon to such an extent that the water stored up by nature in the superficial deposits was rapidly exhausted, and a large pumping station has been erected at Elizabeth Bay from which sea-water is pumped to Kolmanskop through a pipe line 17 miles in length. Water for drinking purposes is derived from condensers erected at the coast, the water being conveyed to the distant fields in carts and to the outlying claims in small tanks carried by animals.

Working costs vary considerably according to the scale on which operations are conducted and the situation of the claims. At Kolmanskop the total expenses per cubic metre of gravel washed—exclusive of administrative charges and depreciation—during 1912, amounted to 6s. 8·7d. In the case of the Koloniale Bergbau Gesellschaft, working on a more extensive scale, the costs are somewhat lower. On the outlying claims, like those situated to the east of Bogenfels and at Frohe Hoffnung, operating expenses are, on the other hand, so high that the exploitation of gravel carrying over 2 carats of diamonds per cubic metre has, in some instances, proved unprofitable.

The cost of production per carat, which naturally depends not only upon the operating costs but upon the diamond content of the material worked, ranges from about 1s. 6d. in the case of the rich Pomona deposits to 15s. in those of the Bogenfels and Frohe Hoffnung claims of the Deutsche Diamanten Gesellschaft. Even the latter figure compares favourably with the cost of production at most of the mines in British South Africa ; and were it not for the small weight of the diamonds which they produce, the discovery of the West African field, in Dr. Wagner's opinion, must have wrought havoc with the Union diamond industry.

During 1912, the original system of taxation, under which imports and royalties claimed from 46½ to 50½ per cent. of the gross value of the diamonds produced, was transformed into a tax on

profits. Under this arrangement the Government exacts 66 per cent. of the total value of the diamonds sold, less 70 per cent. of the cost of production, plus 2 per cent. of the total revenue on behalf of the Diamond Régie ; the working costs to include an allowance of 10 per cent. of the amount spent and not written off on plant and machinery. Assuming, for example, that a company produces diamonds to the value of £10,000, and that the total working costs, including the 10 per cent. allowance, amount to £4,000, the cost is £6,600—£2,800+£200=£4,000, or 40 per cent. When the cost of production amounts to 95 per cent. or more of the total revenue, no tax is payable. This reform in the method of taxation had far-reaching results, for while under the old system it paid the companies best to work off the rich patches of gravel and to leave the poor deposits alone, the new system made it far more profitable to exploit the rich and poor material together in a rational manner. The new taxation accordingly led to the adoption of a wholesale policy of mining, in place of the selective policy previously practised.

The British Consular report says : “ It is still impossible to forecast the life of the fields with any degree of certainty. Some engineers are inclined to estimate it roughly at a further twelve to fifteen years. The difficulty in the way of making an estimate is apparent when one considers the superficial area over which the diamonds are scattered. One company alone has approximately 90,000 acres

of claim. A great portion of this area consists of barren sand and rock, and it takes time merely to ascertain the extent of the diamondiferous gravel, which may be thinly spread upon the bed-rock, or be 30 feet deep, or any thickness between these two extremes."

Dr. Wagner, in his concluding remarks upon the future of the South-West African diamond field, writes: "Notwithstanding the fact that an enormous amount of prospecting work has been carried out by the different companies, no important gravel deposits have been discovered in the littoral of German South-West Africa since 1910; and the area of the field is therefore not at all likely to be increased. With regard to the claims now being worked it may be safely affirmed that, except in so far as the Pomona area is concerned, the cream has been skimmed; or, in other words, that the richest and most accessible areas of gravel have been worked out. The deposits in the Ida Tal at Pomona, while of phenomenal richness, are very shallow and of limited extent, and their importance appears to have been greatly over-rated. As against the foregoing, there can be no question that vast resources, in the form of low-grade gravel, are still available; and now that the exploitation of this material has been rendered feasible by the new method of taxation, and the Government has wisely decided to keep the output within reasonable limits, a long and prosperous career may confidently be predicted for the German diamond industry."

THE NORTHERN DIAMOND FIELDS

When in October, 1908, Bernberg placed prohibitive restrictions on the southern diamond fields, many prospectors left them for the less popular diamond fields north of the 26 parallel of latitude. Prospectors who coasted along in a cutter first found diamonds in Spencer Bay, and the news of the discovery attracted numberless expeditions from Luderitzbucht, Swakopmund and Windhoek, and many men risked all their savings in companies, hoping to reap profits on the same scale as those of the southern fields. These hopes have been bitterly disappointed. In 1909, after about 5,000 claims had been occupied, it was found that the fields in general were poorer than those in the south, and that great obstacles stood in the way of their development, including the enormous distance from Luderitzbucht and the difficulty of transport. Especially it was realized that the heavy taxation, then 33%, on the proceeds of sale, not only excluded all chance of profits, but meant working at a loss. The owners' prospects were not rosy, and over 2,000,000 marks had been already lost. At this time the Diamantfelder-Verwertungs Gesellschaft Konzigstronbucht was formed, and with the assistance of various other companies, combined efforts were made to put matters on a better footing. In April, 1914, Dr. Krause, a mining engineer, began the construction of a railway from the landing place at Conception Bay to the foot of the great girdle of dunes. The water-conduit (from Conception Bay)

was also undertaken, and when these are completed, two of the greatest difficulties will be overcome.

The one outstanding advantage possessed by these northern diamond fields, which is not to be under-estimated, is the sufficient supply, on the spot, of water that is only slightly brackish and can even be used for watering animals. But they are less favourably endowed by nature than the southern fields, and operations can only be persevered with if the miners receive generous consideration and support from the administration.

THE DIAMOND RÉGIE

IN the first few months of 1913 the sufficiency of Ovambo labourers on the Luderitzbucht diamond fields, the settlement of outstanding grievances, and the reform in the system of taxation, put the industry on a better basis, and an era of prosperity and contentment appeared to have set in. During the second half of the year, the hated shadow of a compulsory restriction of output hung over the mining companies, and caused intense dissatisfaction, but, from a purely mining point of view, the year was most satisfactory, as the following table of output since the fields were discovered will show :—

					<i>Carats.</i>
1908	..	..	..	..	39,375
1909	..	..	..	..	483,268
1910	..	..	..	..	867,296
1911	..	..	..	..	747,152
1912	..	..	..	..	985,882
1913	..	..	..	..	1,570,000

The enormous increase in the returns for 1913 was principally due to the inclusion of the Pomona mine in the list of producers. The Pomona began operations in September, 1912, and immediately took the leading position in the local industry as regards quantity and quality of output. During 1913, 617,038 carats were obtained from the company's

claims, though the plant and the number of labourers employed was less than that required by certain other companies to produce one-tenth of the Pomona output. The slight improvement in the production of the older mines was made possible by the relief afforded by the altered system of taxation and the improvements introduced in machinery and the methods of mining.

The improvements in the machinery enables the miners to recover practically all the small, discoloured and misshapen stones that used to escape detection, and tends to reduce the average size and quality of the output while increasing the quantity. Although this tendency was observable in 1913, the claims in the Elizabeth Bay district, on which work was done in 1912, produced stones which raised the general average of the output for 1913 to a higher level than that of the previous few years. While the average of some companies was from 8 to 10 stones to the carat, the Pomona average was 2½ stones to the carat. Individual diamonds of fair size and value were discovered, including the record stone of nearly 35 carats, found just outside the Pomona boundary. During 1913, 1,284,727 carats were sold for £2,153,230, an average price of £1 13s. 6d. per carat. as against the sale of 902,157 carats in 1912 for £1,303,092 or an average of £1 8s. 8d. per carat. Although only 1,284,727 carats were sold out of a production of 1,570,000 carats in 1913, better prices were obtained in spite of the fact that a large stock of unsold diamonds had to be locked up in Berlin.

From 1908 to 1912 the German mining companies produced diamonds to the full capacity of their claims and machinery and, as the world's demand for the precious stones continued to increase, the high-class mellee which forms the German output found a ready sale, and the Antwerp syndicate, who had contracted to purchase the diamonds, raised no warning voice against the danger of over-production. But the greatly increased monthly output of 1913 came as a surprise, and the syndicate were unable to take over the whole of each shipment. The Board of the Régie was unable to determine whether this inability was due to the state of the market or to the weakness of the Antwerp syndicate, and the controversy which raged over the question split the directorate of that body into two irreconcilable parties.

The Diamond Régie was a company founded by Government decree in 1909 to take delivery, after March 1st in that year, of all diamonds found in the German South-West African fields, to place the output on the market, and to distribute the proceeds among the parties concerned, after deducting taxes, royalties and commission. The fear that the purchase of the German output by the London Diamond Syndicate would give that corporation the control of the market, was the obvious reason for enjoining the delivery of the stones to the Antwerp Diamond Syndicate at prices to be agreed upon from time to time between the Régie and the syndicate. The principal shareholders in the Régie were leading

German bankers, and the manner in which the diamonds were sold was left entirely to their discretion. The actual owners were not represented in the company, and their property was disposed of without their having anything to say in the matter. This complete severance of the selling business from the producing business was bound to lead to serious complications. From the outset there was much dissatisfaction on the part of the producers, and by dint of constant agitation the Reichstag was induced to pass a resolution early in 1912, calling upon the Colonial Office to make provision for the adequate representation of the diamond mining companies in the deliberations of the Régie. In March, 1913, the wish of the Reichstag was carried out to a certain extent. The producers were allowed to take over practically half the Régie shares, though the Government in its capacity of producer, and the bankers between them, retained a small majority, which still gave them the control of the company's operations.

The producers, who had all along maintained that their output was being sold at less than market values, immediately made their influence felt when they were admitted into the Régie. They caused tenders to be submitted, not later than May 15th, 1913, for the purchase of the next 1,000,000 carats to arrive from German South-West Africa after the expiration of the Antwerp syndicate's contract, which ran out in that month.

The Antwerp Diamond Syndicate with a tender of 46 marks per carat, basis price, was successful.

The next highest tenderers were the London Diamond Syndicate, with 45 marks per carat. The competition seems to have had beneficial results, inasmuch as the average price paid by the Antwerp syndicate in 1912 had been about 29 marks and in 1911 25 marks. After making due allowance for the improved quality of the output, the price, class for class, advanced by about 15 per cent.

The general satisfaction with this result was marred almost immediately by the discovery that the Antwerp syndicate had been privily given an assurance that, although the output was averaging 130,000 carats per month, it would not be expected to take delivery of more than it required, and the rate of delivery was actually reduced to about 100,000 carats a month. As all the diamond fields in South Africa were working at full capacity to enable the United States to fill up stocks before the new tariff came into force, the producers entered a vigorous protest against this undertaking, to which they were not a party. They argued that if this condition had been made in the case of other tenderers, the competition would have been keener and prices higher; that the Antwerp syndicate was placed in a privileged position at the producers' expense; and that by availing themselves of this permission to take a limited delivery, they were acting detrimentally to the interests of the German industry.

The Régie replied that the state of the market made it imperative, in the interests of the German

diamond industry, that the output should be restricted and the producers were called upon to limit their production voluntarily. This they refused to do. They maintained that they only produced a fraction of the world's output, and if they consented to limit it without entering into an understanding with the principal foreign diamond merchants, overproduction on the part of the other diamond companies would follow, and that any understanding they might arrive at in the future would be determined upon the basis of their previous production. Meantime the Balkan War, tightness of money and the temporary slackness of American buying, necessitated some arrangement being arrived at between the leading diamond interests in Africa, London and Berlin, and the question of a conference on the subject of restriction was mooted. The difference between the members of the Régie developed into a deadlock, and the German Government, whose interest in the revenue derived from diamonds was greater than those of the producers themselves, determined upon a decisive line of action. They acquired a majority of votes in the Régie by taking over the shares belonging to the bankers, and when, on December 6th, 1913, the Government announced its intention of carrying on the business, the Régie, in its old shape, ceased to exist. The decision upon the subject of the quantity of German diamonds that should be sold for each producer was abrogated by the Government as from January 1st, 1914. The maximum for 1914, from all companies combined,

was fixed at 1,038,000 carats, or 86,500 carats a month, and each company was informed what its share would be. It was not possible to prevent the companies from producing more than their quota, but if the ordinance was strictly enforced, the retarded conversion of the diamonds into cash would act as an automatic check upon production by reducing the amount of cash available to pay for it. The producers protested against what they describe as high-handed and illegal action, and took proceedings against the Government. Subsequently these were withdrawn, pending the result of negotiations with a view to a settlement, mutually satisfactory to the Government and the producers. These negotiations terminated successfully, and the Régie was re-organized, half the shares being held by the Government and half by the mining companies. The Board was composed of eight members, four of whom were to be selected by the Companies and four to be nominated by the Government.

The Régie was thus re-constituted under the management of the parties directly interested in the revenue derived from the sale of the diamonds. But the mining representatives were not convinced that a restriction of output was necessary, and the mines carried on their work as usual. Neither the Government nor the shareholders could afford to adopt a policy that would tend to diminish the profits of the industry, and it was thought that measures, decided upon by the Régie, would be backed up by definite instructions to the mine managers. In these circum-

stances it became possible for the Régie to enter into a conference with representatives of the diamond industry in other countries, as it was in a position to guarantee the fulfilment of agreements arrived at with the view of keeping the market steady and maintaining or improving prices.

Having outlined the Régie controversy and the position of affairs at the beginning of the war, it may be of interest to append a statement showing the output and values of diamonds during the last three years from mines in the Union of South Africa and of the German South-West African mines during the same period. In the case of the German diamonds the figures quoted are taken from the Régie reports. The British South African figures are from Government statistics :—

QUANTITIES.

<i>Country.</i>	1911. <i>Carats.</i>	1912. <i>Carats.</i>	1913. <i>Carats.</i>
Union of South Africa	4,891,998	5,071,882	5,163,546
German S.W. Africa	816,296	902,157	1,284,727
Total ..	<u>5,708,294</u>	<u>5,974,039</u>	<u>6,448,273</u>

VALUES.

<i>Country.</i>	1911. £	1912. £	1913. £
Union of South Africa	8,746,724	10,061,489	11,389,807
German S.W. Africa	1,019,444	1,303,092	2,153,230
Total ..	<u>9,766,168</u>	<u>11,364,581</u>	<u>13,543,037</u>

A comparison of the 1913 figures with those of 1911 shows that the Union of South Africa increased its annual output by 271,548 carats, valued at £2,643,083. During the same period the German South-West African sales went up by 468,431 carats, valued at £1,133,786. But on December 31st, 1912, the Régie had approximately 350,000 carats of unsold diamonds on hand. The increase over 1911 in the amount of the German output was roughly 820,000 carats.

Whatever may be the future in store for the diamond fields, it is certain that the discovery of diamonds came in the nick of time and had the effect of completely reforming the business and the Budget of the Protectorate. It goes without saying that the rise of a great industry would have the greatest effect upon its local centre—Luderitzbucht. Special stress must, however, be laid upon the fact that the influence of the diamond mining is not only local, but has wide-reaching effects over the whole colony. Luderitzbucht, which was only a settlement in 1904, with three firms, few white people, and only two or three officials, and in 1908 was only a modest township, had, at the commencement of the war, 1,000 white inhabitants, fine buildings, churches and schools. The Namib Plains, which were an absolutely unknown district until 1908, was, in 1913, inhabited by hundreds of engineers, miners, merchants, &c., besides about 3,000 natives.

The increase in population coincides with the increase in trade, especially in food, drinks,

machinery, hardware, mineral, oils, &c., and the diamond industry, which during the last five years has produced two-thirds of the total revenue, has made its beneficent effects felt in numberless ways. Luderitzbucht has been rebuilt, a railway has been constructed, and the demand for washing machinery has transformed the local locksmith's shop into the Luderitzbucht Machine Factory. The demand for the daily necessities of life roused the enterprising spirit of the tradesmen and the hotel-keepers. Although a certain amount of the money earned by employees, &c., found its way to the mother-country, far the greater part of it was spent in the Protectorate. Other benefits following upon the discovery of the diamonds, that cannot be calculated by figures, are the transformation of a trackless, unknown, untrodden wilderness into a "workable," well-mapped district, traversed by a 600 mm. gauge railway. The great sums of money accruing from it that have been placed at the disposal of the Protectorate made it possible to construct the Amboland Railway, which will serve, in the first place, for the transport of diamond miners, but will also be a means of opening up this valuable district, with which there is no other means of connection. A considerable sum will have to be spent on the construction of reservoirs, which will supply large tracts of country with water and make the settlement of a denser population possible. This will bring increased prosperity to the whole country, for which it will have to thank the diamond industry even if, in time, no trace of the latter remains.



LÜDERITZBUCHT, SOUTH-WEST AFRICA.



SWAKOPMUND, SOUTH-WEST AFRICA.



THE BOGEN ROCK (OVER 150 FT. HIGH), SOUTH OF LÜDERITZBUCHT, SOUTH-WEST AFRICA.



COAST SCENERY, NEAR LÜDERITZBUCHT, SOUTH-WEST AFRICA.



SIEDLUNG, IN HEREROLAND, SOUTH-WEST AFRICA.



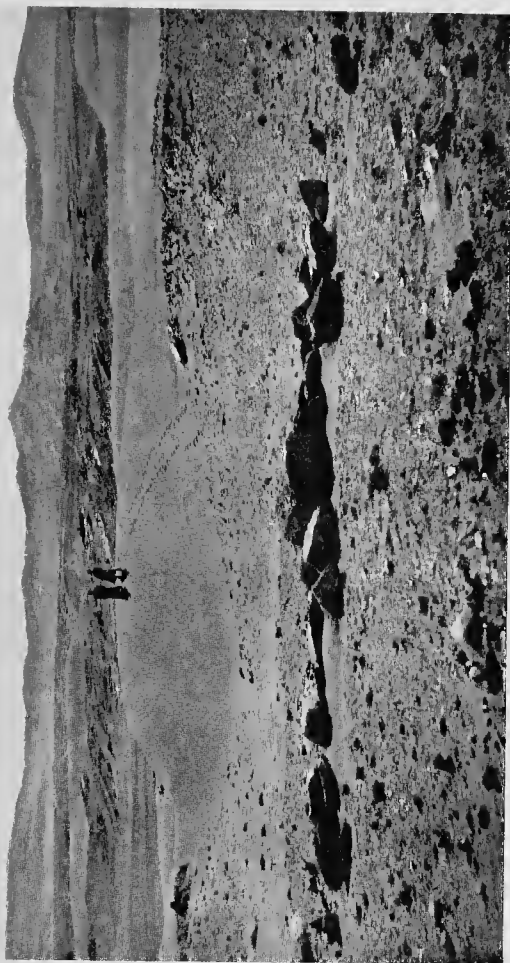
VIEW OF KEETMANSHOOP, SOUTH-WEST AFRICA.



GENERAL VIEW OF OTJIMBINGWE, SOUTH-WEST AFRICA.



GREAT SHIFTING SAND DUNE AT GRASPLATZ, NEAR LÜDERITZBUCHT, SOUTH-WEST AFRICA.



SCENERY IN THE NAMIB, SOUTH-WEST AFRICA.



HERD OF CATTLE IN SOUTH-WEST AFRICA.



GERICKE FARM, AT GOANIKONTES, IN THE SWAKOP VALLEY, SOUTH-WEST AFRICA.



VIEW OF THE NAUKLUFT MOUNTAINS, SOUTH-WEST AFRICA



OX WAGON ON THE "PAD," SOUTH-WEST AFRICA.

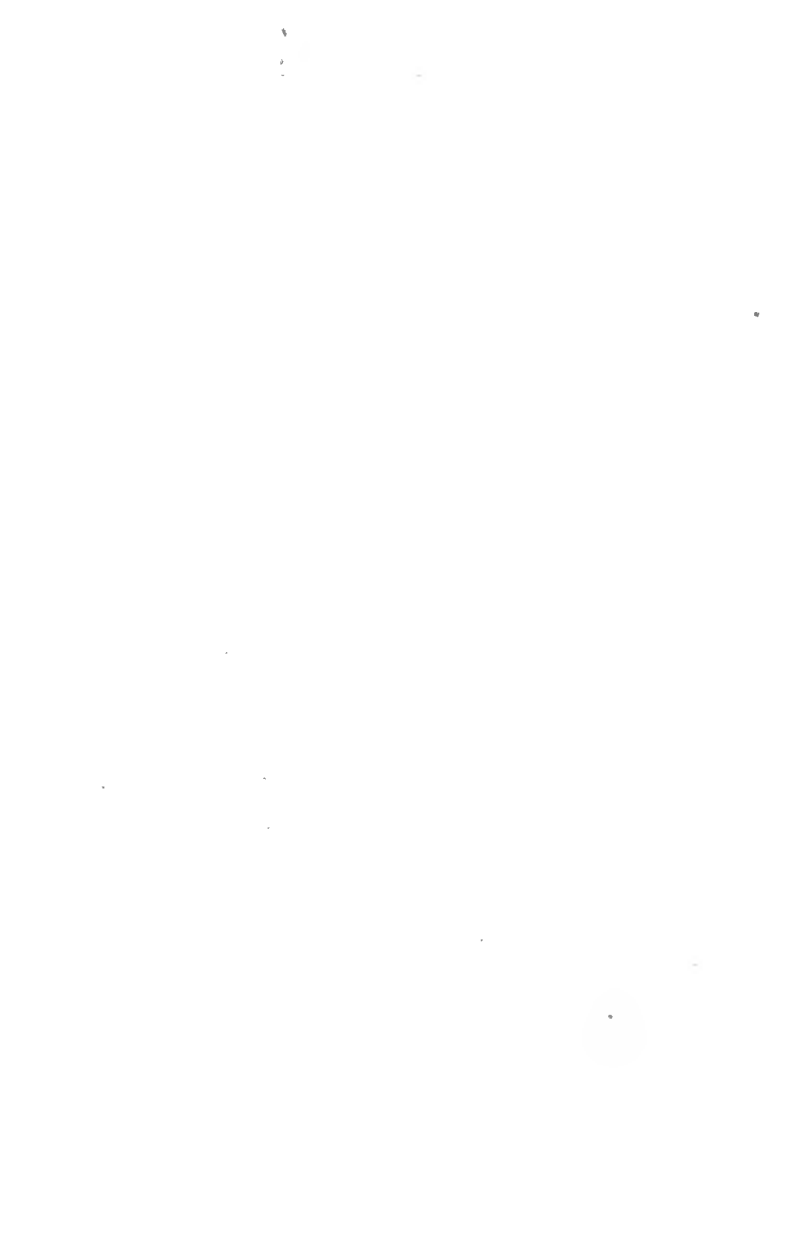


GRANARIES IN AMBOLAND SOUTH-WEST AFRICA.



HERERO WOMAN WITH HER CHILDREN, SOUTH-WEST AFRICA.







A. F. CALVERT'S MILITARY MAP OF GERMAN EAST AFRICA.

EAST AFRICA

EARLY HISTORY.

THE year 1884 marked the commencement of German colonisation under the ægis of the State. In the previous fourteen years, which represented the first period of Germany's privately conducted experiments in economic expansion, the State had refused sympathy and support to any scheme of Colonial Imperialism. Bismarck had negatived suggestions for the annexation of French Indo-China and Pondichéry, he had declined to subsidise Luderitz's company at Angra Pequena (Luderitzbucht), and had withheld support from the companies established on the coast of East Africa. It was not until 1884—the year of the Berlin Conference—that the Government revealed its change of policy by reconnoitring the Gulf of Guinea and securing the provinces of Togo and the Cameroons. In the same year Bismarck and Prince Hohenlohe-Langenburg, the President of the academic German Colonial Society, refused to be beguiled by the proposals of Dr. Carl Peters, who had studied in England the history of British colonial activities, and was fired with the idea of founding "adventurers' companies" for the creation of German overseas

possessions. Dr. Peters, undeterred by the attitude of the Imperial Chancellor, established the Society for German Colonisation, raised a capital of £8,750 from sympathetic "adventurers," and sailed for Zanzibar, where he landed on November 4th, 1884.

On this expedition Dr. Peters made twelve treaties, by which he acquired the well-watered, fertile, mountainous province which is comprised by the countries of Useguha, Nguru, Usagara, and Ukami, and forms a tract of territory as large as Southern Germany. Although Bismarck had pursued Dr. Peters to Africa with an official communication to the effect that the State would not grant him protection for his own life or for properties he might acquire opposite Zanzibar, the Government thought better of their decision, and on his return to Berlin he received, on February 27th, 1885, an Imperial Charter, signed by the Emperor and the Imperial Chancellor. The intrepid adventurer founded the German East Africa Company, and undertook to create a German colonial empire by extending his treaty possessions in the west to the three great lakes of Central Africa, including Uganda and the Upper Nile, and, in the north, over the countries of the Somali as far as the British Colony of Berbera, including Mount Kilimanjaro and Mount Kenia. But the coastal regions and harbours of the original concessions which were not included in the company's jurisdiction, were administered by Arab officials appointed by the Sultan of Zanzibar, and it was obvious that so long as the harbours and the

Customs dues were in the control of the Arabs, the development of the newly-acquired German hinterland would be rendered impossible.

THE GERMAN EAST AFRICA COMPANY.

Under the powers vested in him as Chairman and General Manager of the German East Africa Company, Dr. Peters opened up negotiations with the Sultan of Zanzibar for the concession of the ports of Dar-es-Salaam and Pangani. Agencies of the Company had been opened in both these ports, and it was hoped that by obtaining the desired concession it would be possible for the Company to traffic direct with the natives of the interior across the strip of land, ten miles wide, which was controlled by the Sultan. During the negotiations it suddenly occurred to Dr. Peters to obtain for the Company the lease of the whole coastline as far as it stood in relation to the German sphere of influence, and on July 30th, 1887, he succeeded in concluding a provisional agreement on the above lines with the Sultan. Certain clauses of this provisional agreement were, however, unsatisfactory, and on Dr. Peters' return to Germany negotiations continued at Zanzibar, the German demands being put forward by Dr. Michahelles, then German Consul-General at Zanzibar, acting upon Prince Bismarck's instructions. On April 22nd, 1888, an agreement was signed.

The fifteenth article of the agreement is as follows : The Sultan cedes to the German East Africa

Company, for a period of fifty years, the administration of his dominions along the coast to the south of the Uмба River, said administration to include policing, the exercise of justice, &c. ; nevertheless, the administration is to continue in the name of the Sultan and under the banner of Zanzibar. The Company acquires the absolute ownership of all unclaimed land, forests, and mines. The Company acquires, moreover, the right to tax the natives. A special article (Article 8) grants the Company the right to create a bank, with the exclusive privilege of issuing notes. From a financial point of view the most important concession obtained by the Company was the administration of the Customs. It was agreed that during the first year the Company would administer the Customs for the Sultan against payment of a 5 per cent. commission, the cost of the administration, up to a sum of 250,000 marks, to be borne by the Sultan. After the first year the Customs were to be leased to the Company for a sum determined by the working results of that year, subject to alterations at the end of every three years. The value of this concession in the eyes of the Company, as Dr. Zintraff explains in an article in the *Deutsch-Ostafrikanische Zeitung*, is proven by the circumstance that it was their intention to combine into one organisation all their officials, who would at the same time be the Customs officials. As regards the date for the taking over of the administration, it was left to the Company to fix any day after August 15th, 1888. In the meantime, Herr Vohsen, a retired

Consul, arrived in East Africa as representative of the Company, with full powers to act, and he fixed August 16th to 18th, 1888, as the date for taking over the administration. Happily, this coincided with the Moslem New Year, and was therefore highly approved of by the Sultan of Zanzibar. It was, moreover, agreed between the Sultan and the Company that the transfer of the administration should be hailed by unfurling, side by side, the flags of the Company and of Zanzibar. An irade, addressed by the Sultan to the Vali of Kilwa in August, 1888, may be reproduced here :—

TO THE VALI OF KILWA :

I hereby order you to hand over to the Deutsch-Ostafrikanische Gesellschaft the house in which you now reside. Give them also your flag ; they will unfurl it, as it best suits them, together with their own flag, on the house which they will select. But both flags must fly side by side. Moreover, if you do not wish to be employed by the Company, return immediately to Zanzibar, and bring with you all weapons and ammunition that belong to us.

Greetings.

SEYD CALIPHA BIN SAID.

GOVERNMENT ASSUME CONTROL.

The preparations for taking over the civil and Customs administration appeared to present no difficulties, and in June, 1888, the representatives of

the Company and the Sultan proceeded to the coast and assured themselves that the impending changes would be received without opposition. The civil administration was taken over on August 16th, the Customs two days later. But no sooner had the blood-red banner of Zanzibar been unfurled side by side with the Company's flag, than the Valis of several towns, who had virtually been the masters of the coastal region, were found to be in a state of revolt. The ceremony was successfully carried out in Dar-es-Salaam, Lindi and Mikindani, but in Pangani the inauguration of the new administration could only take place under the guns of the *Moeve*. A landing party had to enforce the unfurling operation at Tanga, and Bagamoyo was in a state of insurrection. Several representatives of the Company were murdered, and others saved their lives by flight ; only Dar-es-Salaam and Bagamoyo, protected by the warships, were enabled to continue as stations of the Company. Terrible months followed that memorable August 16th, 1888, and it became increasingly plain that the Company was not capable of controlling the situation. Bismarck, therefore, introduced a law against the slave traffic which was still flourishing in East Africa, and the Government voted £100,000 to give effect to the measure. Major von Wissman, the celebrated African explorer, was placed at the head of an expedition composed of Zulus and Soudanese, and under his energetic leadership the revolt was quelled in the course of a few

months. The lost places were retaken with the help of the Marines, and in 1891 order was restored in the Company's territories. On April 1st of that year the Government took over the administration of German East Africa. Roads were built, railways were commenced, and a certain amount of progress was made. But the development of the Colony on a broad and systematic scale was retarded by the difficulty that was experienced in getting the Government to vote the necessary monies, and a series of events occurred in the colony to hamper the efforts of the local administrators. The Zelenski expedition was practically wiped out on August 17th, 1891, the populace was nearly decimated by famine, and the early experiments in the cultivation of plantations were largely attended by failure. It was not until after the dissolution of the Imperial Parliament in 1906 that the work of the colonisation of East Africa received sustained encouragement from the State. In Freihers V. Vechenberg an energetic and determined personality was found at the head of affairs, and with the appointment of Dernburg as State Secretary, the German colonial policy received a fresh impetus which was immediately productive of concrete results.

THE MILITARY FORCES.

But the dissatisfaction and unrest among the Arabs proved a formidable obstacle in the way of the pacification of the country, and it was recognised

that as "a white force would be nothing more than a walking hospital"—to quote from an article by Captain A. Fonk in the *Kolonial Kalendar*—a reliable colonial force must be recruited from natives accustomed to the climate. Commissioner Wissman drew his troops from Egypt, where large numbers of Soudanese soldiers, who had been dismissed from the Egyptian Army, were persuaded to enlist by the prospects of "fresh adventures, booty and high pay." But this method of recruiting was interrupted by what Dr. Becker describes as the unfriendly interference of the English Government, and the German colonial authorities had to search elsewhere for their raw military material. This explains the mixed nationalities of the colonial force, which is composed of Soudanese, Abyssinians, Somalis, Zulus, and cannibal natives of the Congo, commanded by white officers trained in the Oriental College at Berlin. "When a transport arrives from Suez with recruits (with bands playing 'Deutschland uber Alles')," writes Captain Fonk, "they are clothed and armed with a model 71 rifle, &c. Most are married. Each receives separate quarters in the barracks, which are built of stone and have corrugated iron roofs. . . . Endless patience is required to turn this class of recruit into a capable *askari*, and in this task the white officers are assisted by native subordinates. The word of command is given in German; the orders in the native languages." The difficulty of giving orders in the native languages of the soldiers

of half-a-dozen nationalities must make the work of training such troops both long and arduous, but Dr. Becker states that without this colonial force there could be no European plantations in the colony. They are a civilising influence among the natives, who have been taught the art of road-making, &c., and who feel secure from robbery and murder under armed protection. Dr. Becker advocates the formation of a troop of reservists, from discharged natives, who would rejoin in case of need, and a large increase in the total strength of colonial troops and police. "Those who understand German East African conditions," he adds, "consider that further strife between black and white in South Africa is more than probable, and that we can only emerge from the contest victorious if we are well prepared."

The military forces of German East Africa are described by the British Vice-Consul in a report published in July, 1913, and the information he gives is corroborated by Captain Bock von Wulffingen in an article on "The Military Position in German East Africa," in *Jahrbuch über die Deutschen Kolonien* (1914). From these sources it appears that the force consists of fourteen companies of native troops, under the command of white officers. The companies, which are each composed of 162 men, are distributed at twenty-three posts on the coast and in the interior. At Dar-es-Salaam, in addition to the 10th company stationed there, there is a recruiting depot with

154 native soldiers, a signalling company of thirty and a band of twenty men respectively. The total strength of the troops is thus 2,472 native soldiers. Three machine-guns and from thirty to forty bearers are attached to each company. The total number of white officers of all ranks is 261, of which three commissioned officers are attached to the police forces, and so are employed in civil administration. The pay of the native soldiers is from twenty to thirty rupees per month for privates, and up to 150 rupees for native non-commissioned officers. The heliographic communications extend over 888 miles. Attempts to establish a pigeon-post have not met with much success. Twelve aluminium boats are in use to facilitate transport, and experiments with collapsible boats are being persevered with.

The British Vice-Consul reports that the short side-arms and the German military rifle M. 71, with which the troops are armed, are to be replaced with the lengthened carbine 98. Captain von Wulfing regards this re-arming of the troops as of special importance as greatly increasing their fighting value. He states that three companies have already (1914) received these carbines, or will have them shortly, while the remainder will be re-armed during the next few years. In the same article we read: "An important alteration in the disposition of the troops in German East Africa is rendered necessary by the extension of the Tanganyika Railway and for the protection of the valuable area it has opened up. It

remains to be seen whether the existing force will be sufficiently strong to protect this line in war time. It would have to guard some 1,300 km. of railway line and a large number of railway stations, water stations, bridges, &c. In order to render fewer troops necessary for this purpose, it would be advisable to build defence works at the most vulnerable points."

DR. PETERS' SUMMARY.

With the establishment of the Company's administration over the whole coast, from the mouth of the Umba River to the Cape Delgado, Dr. Peters regarded his work as completed. The modification of the agreement in 1890 by the treaty by which Great Britain obtained protectorate over the Sultanate of Zanzibar and the coast, the hinterland, including Mount Kenia and Uganda and the Southern Sudan, in exchange for recognition of Germany's rights to the remainder of German East Africa and the cession of Heligoland, was a terrible disappointment to the doctor, who did not foresee the European conflict of 1914 or the value of Heligoland as a German naval station. But the treaty of 1890 left Germany with an East African possession which had an area of twice the German Empire in Europe—roughly, a million square miles, and a population of between 7,000,000 and 8,000,000 people. "The country," writes Dr. Peters in a special article contributed to *The African World* in November, 1913, "is fairly

well watered by rivers, such as Pangani, Wami, Kingani, Rufiji, Rovuma. Its greatest value is the fact that it borders in the west on the three great lakes—Lakes Victoria, Tanganyika and Nyasa. This gives it, so to say, a second interior coast line. Its climate, of course, is tropical throughout, but as it is rising from the sea upwards in terraces to high plateaux of 6,000 ft. and more, it has different zones, some of which are quite fit for European immigration as soon as proper railway communications are established between these parts and the coast. Of such available lands we have about 48,000 English square miles.

“As a whole, the colony may be described as a good agricultural country, and it has already been found fit for all sorts of tropical plantations. It will soon compete keenly with large tracts of British East India and Ceylon for indiarubber, fibre plants, cotton, tobacco, coffee, tea, sugar, rice, and other products. Our best plantation districts, as far as we know at this time, are situated in the north of the colony—Usambara, Kilimanjaro, and the countries to the west of it. But there is not the slightest doubt that round our great equatorial lakes equally good territories will be opened up.”

In conclusion, Dr. Peters writes of the colony which he was instrumental in founding: “Take it all in all, German East Africa is perhaps not a colony of the first class. It is not a British India, nor may it be compared with the rich islands of the Malay

Archipelago, or the West Indies. But it offers splendid openings in several directions, and if properly managed it may be developed into a wide and very important field for German enterprise, and take its great share in the commerce and prosperity of the world."

Dr. Peters was recalled in 1895, and was rewarded for the conception and creation of German East Africa by an official campaign of intrigues, libels and national ingratitude which was almost incredible in its malevolence. He died before seeing the territory he had commandeered for his country—"one of the most priceless of the colonial pearls in the Imperial crown"—wrested from the grasp of the first and last ruler of a German colonial empire.

COMMERCIAL AND INDUSTRIAL PROGRESS.

A general idea of the progress that the German administrators and traders have effected in this quarter of the world, and the present economic value of the colony, may be gathered from the following figures, which have been summarised from the latest British Consular Report.

The total trade of the country for the year 1902 amounted to £707,088, consisting of imports to the value of £442,923 and exports £264,165. In the year 1913 the total had grown to no less than £4,445,477, of which the imports amounted to £2,667,925 and the exports to £1,777,552.

The total values of the imports and exports for

the last thirteen years, ending 1912, are given below:—

Year.			Imports.	Exports.	Total.
			£	£	£
1900	..	..	601,527	214,682	816,209
1901	..	..	475,538	231,174	706,712
1902	..	..	442,923	264,165	707,088
1903	..	..	559,403	352,710	912,113
1904	..	..	716,945	447,528	1,164,473
1905	..	..	882,767	497,483	1,380,250
1906	..	..	1,257,642	549,736	1,807,378
1907	..	..	1,190,318	625,009	1,815,327
1908	..	..	1,289,338	543,692	1,833,030
1909	..	..	1,697,085	655,974	2,353,059
1910	..	..	1,932,938	1,040,269	2,973,207
1911	..	..	2,294,582	1,121,888	3,416,470
1912	..	..	2,515,000	1,570,000	4,085,000
1913	..	..	2,667,925	1,777,552	4,445,477

The steady expansion of trade is attributed to the increasing economic importance of the Protectorate, and not merely to an augmented value in the importation of materials. According to the British Consular Report for the years 1912-13, which was issued while these pages were being passed for the press, the value of the total imports amounted to £2,515,455 in the year 1912, and shows an increase of 9·6 per cent. over those of the previous year. The imports *via* the coast ports amounted to £2,234,585 and show an increase of 10·7 per cent., while those *via* the overland routes (chiefly *via* the Uganda Railway and Victoria Nyanza) amounted to £280,870, and show an increase of 1·5 per cent.

In order to form a more correct idea of the

economic value of the foregoing figures, it is necessary to subtract from them the value of the imports of specie and of material imported for railroad construction. They were as follows: Specie, £27,460 in 1912 as compared with £105,440 in 1911 (this decrease of nearly 74 per cent. must be regarded as a chance occurrence, as the number of small coins in circulation is continually increasing). Railway building material, consisting of raw iron and iron rails (£267,000), unclassified iron (£136,450) and rolling-stock (£113,750), accounted for imports to the value of £517,200. By subtracting the total value of the imports of specie and railway material, the result obtained shows the actual trade value of the imports, viz., £1,970,800 in 1912 as compared with £1,738,100 in 1911, an increase of £232,700. As a matter of fact, the actual trade value of the imports is somewhat higher, as some imports were included under the heading of "Railroad construction material," which were not actually intended for that purpose.

The imports *via* the Uganda Railway and the ports on Lake Victoria Nyanza rose in value from £253,496 in 1911 to £263,446 in 1912. Their value in 1910 was £256,607, compared with which the figures for 1911 show a slight decrease.

The value of the trade (imports and exports) *via* Lake Tanganyika fell from £5,824 to £2,449. This decline is, however, only apparent, and is due to the fact that goods in transit are now excluded from the imports and exports.

The general increase in the total imports was extended over all classes of goods, those intended for European and native consumption and those connected with the economic development of the country. It is worthy of mention that the value of the textiles imported mostly for native wear formed almost half the value of the total imports, exclusive of specie and railway construction material.

The total value of the exports in 1912 was £1,570,915, of which £1,253,985 went *via* the coast ports and £316,930 fell to the share of the lake ports. These figures show an increase of £449,030, i.e., 40 per cent., over those for 1911, the coast trade increasing by 46·4 per cent. and the overland trade by 19·2 per cent. There was no export of specie in 1912. It is interesting to compare the value of the exports of native products with those from European plantations. In 1912 the value of the exports solely from European plantations (rubber and sisal) was £729,650, of those which came partly from European and partly from native cultivation (coffee, cotton, copra) it was £278,800, and of those consisting almost wholly of native produce (tobacco, rice, ground-nuts, simsim, sugar, thick molasses) it was £102,000. The exports from cattle rearing (hides, skins and samli), amounting to £216,250, were mostly of native production, as were also wild rubber, wax and copal, valued at £107,000.

The openings for British trade in the Protectorate will be, of course, entirely changed by the results of the present war, but when hostilities were declared in

August, 1914, no British trading firm was engaged in business in the territory, nor was a single British merchant resident in either of the chief towns—Dar-es-Salaam and Tanga. This lack of enterprise is the more remarkable in view of the fact that a number of German firms were trading in Zanzibar and British East Africa, and that the trade in articles for the native market in German territory is capable of enormous expansion. As a pre-war note, the following paragraph on the subject from the Consular Report, is of interest: "Any firm opening a branch here now would have to face most serious competition and to be satisfied at first with very small profits. Suitable premises are difficult to obtain, rents are high and clerical labour is expensive. Another difficulty lies in the fact that most of the Indians, through whom business would have to be conducted, are financially dependent on the existing firms.

In his review of the general situation, the British Vice-Consul refers to the great hopes entertained for the expansion of trade from the extension of railway communication, and adds: "The general progress is here, however, as elsewhere, not without its shadowy side. The planters, who often lack cohesion and the ability to work together for the general good, are apt to lay their misfortunes at the door of the Government in times of adversity. They complain that there are too many officials, that they are overburdened with troublesome regulations and that the Government does not supply them with the work-people they require. The officials, on the other hand,

find their districts too large, while the volume of work is continually increasing. The Government is willing to assist the planter to obtain his workpeople, but is well aware that the planter needs not only to be provided with hands, but often to be controlled in his bearing towards them. It is also alive to the fact that natives must be encouraged to work on their own farms (*shambas*) as well as for Europeans. The high tariffs on the railways are a source of constant and loud complaints from planters, merchants and farmers, and a sympathetic echo is heard in many official quarters. The hopes entertained in some quarters in Germany that this Protectorate would become an outlet for numerous small settlers have not been fulfilled. The labour question still bristles with difficulties, and the recent rubber crisis has caused much depression in planters' circles. Capital flows but slowly into the country."

PHYSICAL FEATURES OF THE PROTECTORATE.

THE territory which has hitherto been known as German East Africa is bounded on the east by the Indian Ocean, on the south by Portuguese East Africa, on the south-west by Nyasaland and Rhodesia, on the west by the Belgian Congo, and on the north and north-east by Uganda and the British East Africa Protectorate. The coast line extends from the mouth of the Umba to a few miles south of the mouth of the Rovuma, a distance of about 620 miles. Of the three large islands which lie off the coast, Pemba and Zanzibar form the British Protectorate of Zanzibar, and Mafia, with an area of about 200 square miles, forms part of German East Africa.

The country as a whole is elevated, the interior plateau of Central Africa ending more or less abruptly near the coast, leaving a coastal plain which, in the north, varies in width from ten to thirty miles, but broadens out further south. The average altitude of the plateau is between 3,000 and 4,000 feet. The highest points in the Protectorate are in the north-east, where the extinct volcano, Kilimanjaro, rises to 19,321 feet, while a little to the west is Mount Meru (14,955 feet). Stretching south-eastwards from Kilimanjaro are the Pare and Usambara Mountains, the latter almost reaching the sea. To the south-west of the Usambara hills, and on the

eastern edge of the plateau, are the mountainous regions of Nguru, Useguha and Usagara. In the south-west of the Protectorate are the Livingstone Mountains, the highest peak of which is over 9,000 feet.

Portions of the great lakes of Central Africa are included in the Protectorate, viz., the southern portion of Victoria Nyanza, the eastern shores of Lake Kivu and Tanganyika, and the northern and north-eastern shores of Nyasa. Situated on a line running through the centre of the country from north-east to south-west are Lakes Natron, Nyarassa and Rukwa.

The country is well watered. The chief rivers draining the plateau and flowing into the Indian Ocean are the Rufiji and the Rovuma. The latter is about 500 miles long and has its source in the mountains east of Nyasa ; for the greater part of its length it forms the boundary between the Protectorate and Portuguese East Africa. The Rufiji is navigable by small steamers for about sixty miles from its mouth ; whilst one of its southern tributaries, the Ulanga, is navigable almost throughout its whole course. Other rivers entering the Indian Ocean are the Pangani, which has its source in a glacier on Kilimanjaro, and the Wami and Kingani, both of which have their origin in mountains on the fringe of the plateau ; none of these is navigable for more than a few miles from its mouth. Of the rivers which feed the great lakes, the more important

are the Mori and Kagera (Victoria Nyanza), Malagarasi (Tanganyika), Songwe and Ruhuhu (Nyasa), and the Saise and Rupa-Songwe (Rukwa). The Kagera, which is 400 miles long, forms the head-water of the Nile, and is navigable for seventy miles from its mouth.

The chief seaports, all of which have good harbours, are, going from north to south, Tanga, with a population of 6,000, Pangani (3,500), Bagamoyo (5,000), Dar-es-Salaam (24,000), Kilwa (5,000), and Lindi (4,000). The most important inland town is Tabora, which has a population of 37,000, and is situated at the junction of the main caravan routes from the coast to Tanganyika and from Victoria Nyanza to Nyasa. Other important inland towns are Korogwe, in the Usambara Mountains, and Morogoro, Kilosa, Mpapua, and Dodoma on the road from Dar-es-Salaam to Tanganyika. On the great lakes the chief towns or settlements are Shirati, Muansa and Bukoba on Victoria Nyanza; Ujiji, Usambara and Bismarckburg on Tanganyika; and Old Langenburg and Wiedhafen on Nyasa. The Protectorate, which for administrative purposes was divided into twenty-four districts, had on March 31st, 1913, a total white population of 5,336, of which 4,107 were of German nationality and ninety British. The white population of the two largest towns was: Dar-es-Salaam, 967 (703 males); and Tanga, 298 (252 males).

The distribution of the male population according

to occupation was as follows on January 1st, 1913 :—

		<i>Per Cent.</i>
Government Officials ..	551	15'6
Attached to Protectorate Troops	186	5'3
Priests and Missionaries ..	498	14'1
Planters and Farmers ..	882	24'9
Engineers, &c.	352	9'9
Mechanics and Workmen ..	355	10
Merchants and Traders ..	523	14'8
Not Classified	189	5'4
Total	3,536	100

The Indian community, which has increased by some 4,000 in the last six years, is regarded with extreme dislike by the majority of the white population, and, to judge by the attitude of the Indians themselves, is not invariably accorded a sympathetic treatment by the authorities. With the exception of Goanese and Parsees (of whom there are practically none in the Protectorate), Indians are placed on the same legal footing as the natives, but they cannot be sentenced to flogging or chain-gang labour. The British Consul contends that the " oft-repeated cry of the Indian danger cannot be taken very seriously, as the risk of a country nearly twice the size of Germany being swamped by about 9,000 Indians is small. As a matter of fact, the Indian is a useful if not an indispensable member of the community. He is a pioneer of trade, a clever clerk and a skilled mechanic. He carries on work which the native is incompetent to perform, and he can do so under conditions of life and with an amount of food and capital which would

be utterly impossible for a European. The general contempt with which he is treated is due partly to the belief that he is the channel through which large sums, which would possibly otherwise be spent in the Protectorate, flow to India, and partly to jealousy on the part of would-be European competitors."

The means of communication has been considerably improved of recent years, and the two railway systems—the Central and the Usambara—with a total track of 996 miles, are supplemented by good roads between the seaports and the trading stations in the interior. The foreign trade of the Protectorate has followed either the overland or the coast routes. Of the former the most important is *via* the Victoria Nyanza ports and the Uganda Railway. Another overland route is *via* Moschi and Taveta and the Uganda Railway, but this decreased in importance after the opening of the Usambara Railway. In the south there is an outlet *via* Shire River and by rail to Chinde, but the trade along this route has never assumed any considerable proportions.

The intentions of the German Government with regard to the extension of railways in East Africa are revealed in the Colonial Budget, which in 1914, sanctioned an expenditure for this purpose of £1,840,000, of which £850,000 was the first instalment of a loan for the construction of a branch line from Tabora to Ruanda, £270,000 to the extension and improvement of the Usambara Railway, and the remaining £720,000 to the continuation of the

Central line from Tabora to the lake. It was estimated that the total length of the branch line, Tabora to Ruanda, would be 481 kiloms., and the total cost £2,357,500, plus a sum of £142,500 for surveying and improving the River Kagera, its tributaries and adjacent watercourses, together with provision of water-craft. Any savings on the main line were to be devoted to the Ruanda branch line. The construction of this line was to be commenced in 1914, and it was estimated that it would be completed in from three to four years. Its effect would be to open up the north-western districts of Urundi and Ruanda, which have not yet been thrown open to Europeans, and large quantities of native produce such as hides and skins, ground-nuts, cotton, oil-palm kernels, &c., were expected to be carried by the new line from the thickly populated north-west, where a conservative estimate places the number of cattle at 300,000, in addition to sheep and goats.

A further sum of £107,500 was provided as the first instalment of the cost of extending the northern railway between Tanga and Moschi to Aruscha, a distance of about 81 kiloms. The total cost of this extension was estimated at £307,500, and it was expected that it would take two years to complete. The line was designed to open up a region said to be suitable for white settlement.

Further sums of £100,000 were provided for the alteration and completion of the line from Tanga to New Moschi and £62,500 for new rolling-stock and two cranes in Tanga.

PLANTATION CULTIVATION.

THE plantation system in German East Africa was introduced in the early days of the Company's occupation, but its expansion has only been seriously undertaken in the last fifteen or sixteen years, being assisted and facilitated by the construction and extension of the roads and railways which link up the fruitful regions with the ports and local markets. The three distinct plantation regions are Usambara in the north with its port of Tanga, along the track of the Tanganyika Railway from the sea to Lake Tanganyika, and in the southern district, which is served by the port of Lindi. The northern plantations behind Tanga, Pangani, Wilhelmstal, and on the slopes of the Usambara were the first in the colony to be taken up, and they are consequently in the most forward state of development. The plantations on the Rufiji and the central district follow the course of the trans-colonial railway, and those in the south are generally located in the coastal regions of Lindi. Isolated plantations are also to be found in the less accessible districts of Mahenge, Iringa and New Langenburg. Many promising plantations are also growing up in Muansa and in the vicinity of Bukoba in the agricultural German territory on the shores of Lake Victoria, while further plantations, alternating with native cultivations, are located in the vicinity of Kilimanjaro and on the Meru. Many British companies own

interests in plantations in the south and along the Tanganyika Railway, and the agricultural districts of the north have also been opened up with the aid of British capital. According to the statistics for 1911, the acreage covered by plantations in German East Africa was :—

	<i>Hectares.</i>		<i>Hectares.</i>	
Rubber	.. 32,682	of which about	11,526	productive.
Sisal-Hemp	.. 21,335	.. ..	11,363	..
Cotton	.. 14,308	.. ..	14,308	..
Coffee	.. 2,904	.. ..	1,199	..
Capok	.. 1,490	.. ..	424	..

In 1913 the acreage covered by the plantations was as follows :—

Rubber	.. ..	113,267	acres.
Sisal-Hemp	.. ..	61,887	..
Cotton	.. ..	35,770	..
Coffee	.. ..	12,007	..
Capok	.. ..	6,580	..

There were, according to the latest statistics published in 1911, 699,568 cocoa-nut palms in the possession of Europeans, representing an area of about 6,500 hectares. Of these 162,172 trees, representing about 1,500 hectares, were productive.

COTTON.

According to the British Consular Report, published in 1915, the cultivation of cotton in German East Africa can hardly have been said to have emerged from the experimental stage, but it has

enjoyed the advantage over other crops in that the Government have taken the keenest interest in its development and have even come to the assistance of the planter. Distinct progress has been made in the direction of a more scientific treatment of soil and crop, and cotton experimental farms have been established at Mpanganya, on the Rufiji River, and at Myombo, near Kilossa, south of the Tanganyika Railway; at Muama, on the Victoria Nyanza, Tabora, in the central district, and Lindi, in the south. The object of these farms is to evolve a variety of the plant best suited to local conditions and to put a period to the dependence of the colony upon other countries for its seed. These experimental stations (further particulars of which will be found in a later chapter) were established as the result of an agreement arrived at on March 14th, 1910, between the Imperial Colonial Office and the Colonial Agricultural Committee, whereby the former took over all cotton experiments in order to place them on a broader basis, thereby increasing the capital expenditure. The following was the general plan of the campaign: The institution of agricultural stations for experimenting with different varieties of cotton, cotton-seed, manure, and irrigation; the destruction of plant diseases; the scientific analysis of cotton soil, and the organisation of a meteorological service. The Colonial Agricultural Committee, on the other hand, was to take over the technical part of cotton exploitation, the construction of ginning stations in connection with the

German machine market and German markets for the purchase of the cotton, the purchase of cotton by the Committee at a guaranteed price, the distribution of prizes (quality, plant, and ploughing), loans on crops and transport reductions, exploitation of all refuse material, the inspection of cotton districts, preliminary irrigation surveys, &c., the control and inspection of cotton qualities in Germany, and cotton-growing exhibits and exhibits of agricultural implements, &c., &c.

SUPERIORITY OF PLANTATION COTTON.

These experiments have already proved that the American upland variety is best suited as regards quantity to the districts of Rufiji, Morogoro, Tabora, and Lindi, and that the plantation system, as it has been tested in Rufiji, is superior to native cultivation. In 1912 1,500 bales were produced in Rufiji, of which 800 bales were grown in European plantations and 700 bales by natives. One plantation, employing on the average 600 workmen, had an output of 430 bales. A comparison between this and the total output to be attributed to approximately 100,000 natives shows that, proportionately, the odds are enormously in favour of the plantations. Moreover, the plantation output would have been much more important if labour had been more prolific at harvesting time. Less successful have been the experiments made in the hinterland of Tanga, the cause being that climatic conditions in that district are totally different from those obtaining

in other parts of the colony. There are two sharply defined rainy seasons, but very irregular as regards their occurrence—it happened one year that there were no rains during the sowing season, whereas, in another year, the bolls were ruined by an untimely rain. It is therefore an open question whether cotton-growing will ever be a success in the north, excepting where artificial irrigation is introduced over large areas freed from rain irregularities. In the Rufiji district, on the other hand, the conditions are very favourable—always supposing that danger of floods has been removed by the regularisation of the river. The advantageous use that can be made of steam ploughs, and the abundance of hand labour available for picking, seem to point to this district as an ideal field for cotton cultivation in plantations.

Cotton was grown on 165 plantations in 1910, but no statistics are available respecting the number of plantations occupied solely in the cultivation of cotton, as on many sisal and rubber plantations cotton is grown as a catch crop during the early stages of growth of the plants and trees. Steam ploughs have only been employed on a few plantations, and most of the planters are compelled to have recourse to manual labour, the prevalence of the tsetse fly rendering the employment of oxen impossible. This is a serious handicap, as manual labour is not only very expensive but is said to be insufficient for a proper treatment of the soil. The acreage under European cultivation in 1913 was about 35,000 acres, on 6,000 acres of which cotton was grown as a

catch crop. The seed of the Egyptian varieties, which were imported yearly from Egypt by the Colonial Agricultural Committee, and distributed among the natives for a raincrop without irrigation, was not successful. The Egyptian cotton, as a rain crop, failed by reason of the many diseases which affected the plant—more particularly a quite new and hitherto unknown disease, called locally “krauselkrankheit” (crinkling disease), which produced great havoc, especially on the European plantations.

Franz Kolbe, in an article dealing with the outlook for the cotton industry in the colony, writes: “In the interior of the colony the rainy and dry seasons are well defined and regular—a circumstance that is bound to favour cotton cultivation. The most promising cotton-growing districts have not been exploited yet, owing to their situation far from the ordinary routes of transport. Such districts are Ussangu (on both banks of the Big Ruaha), Rukwasenke, and the Wembare plateau. In Ussangu and Rukwasenke cotton grows wild and is also cultivated on a small scale by the natives. Artificial irrigation will be necessary on the Wembare plateau. The Government expert, reporting on the last-named region, states that the composition of the soil is extremely favourable to cotton-growing, being almost identical with the best Texas and Mississippi soils, and that the region, capable of being irrigated, would not only amply pay for the construction of a canal leading out of Lake Victoria, but would, if grown

with cotton, produce such quantities that the world's market value would be appreciably affected."

NATIVE CULTIVATION.

The Government made strenuous efforts to induce the natives to embark in cotton cultivation, and in the districts of Muansa, Bagamoyo, Morogoro, Kissaki, Mohoro, Kilwa, and Lindi, their endeavours met with some response. In the year 1910-11 about 170 tons of seed were distributed, only one form of seed being distributed in each district, in order to obtain a uniform quality in the crop. In addition to giving the seeds to native cultivators, the Government guaranteed them a standard price for their crops and offered rewards in the shape of cash or agricultural implements for the best quality of cotton produced. Experimental farms were established at Mpanganya and Nyombo, and instruction in the treatment of crops was given by white officials. But as a result of the experiments that had been conducted up to the outbreak of the war, it had not been decided whether the plantation system, or that system whereby the native cultivates his own plot, is the best in the interests of cotton growing, but, according to the results obtained so far, it can be asserted that the majority of the natives of German East Africa (with the possible exception of the inhabitants of Muansa) are not capable of independent work, and have to be permanently under European control. A new system of cultivation is being tried

in the south in Lindi, which may be found to be adaptable in future to large tracts of land in German East Africa. According to this system, European landowners sublet land to the natives for the purpose of growing cotton, or they induce the inhabitants of the neighbourhood to grow cotton, at the same time allowing them an advance in cash, to be repaid out of the crop. In this way they exercise a certain control over the cultivation of cotton which can only tend to improve it. The results so far obtained under this system speak very highly in its favour.

The British Consular Report records the fact that a sum of £10,000 for 1913 and each of the following four years to promote the development of cotton growing in German East Africa was voted by the Reichstag in connection with the estimates for 1913.

SISAL.

The Editor of the *German Colonial Gazette*, writing upon "The German Colonies in 1913" in the German Year Book, says, under the heading of German East Africa: "Sisal is to-day the most important product for export. In 1912, sisal hemp to the value of £375,000 was exported, and both quantity and quality much improved in 1913. . . . Sisal culture in German East Africa is of very recent origin. Some twenty years ago Dr. Hindorf imported a few sisal plants from Central America. Of 2,000 plants, only seventy-two could be kept alive, and yet to-day there are millions of plants cultivated."

According to the British Vice-Consul, the cultivation of sisal has been a great success, and seems to have an assured future, as the crop is admirably adapted to local conditions. In 1911 11,212 tons were exported, with a value of £226,500, and the fibre has fetched good prices, as much as £35 being paid for the ton. The plantations are not confined to one district, but are scattered over the whole colony. In 1911 there were 53,387 acres under cultivation, and this in 1912 had increased to 61,877 acres. The plant thrives on a variety of soils, and so far no disease of any importance has attacked it. The actual fibre, which is the marketable product, forms only 4 per cent. of the whole leaf, and experiments are being made to utilise the 96 per cent. which at present goes to waste. There seems to be no danger of over-production, as the demand for this commodity for the manufacture of ropes, especially ships' cables, is continually on the increase. The exports of sisal have been made hitherto entirely to Germany.

Sisal, which comes from Mexico, and is called after the Mexican port of that name, is a plant which lives from six to eight years, but the span of its utility is limited to about four years, during which time it produces yearly from sixty to eighty leaves. For the first few years a field of sisal plants, or agaves, is carefully tended and weeded. When the harvest season comes around, natives cut off the outer leaves of each plant—some of them grow to a height of $1\frac{3}{4}$ metres, tie them up into sheaves, throw them on a lorry, and transport them to a factory.

Here the leaves feed a specialised machine, which separates the fibres from the surrounding pulpy matter. The fibres are then washed, cleaned, and in a couple of hours, when dry, they are bleached. When this has been done they are placed in an automatic brush, which removes any foreign substance which may still be hanging to the thread, and the fibres are then laid side by side in strands. These are eventually taken to the baling section, where, under hydraulic pressure, the sisal hemp is packed into bales of about 250 kilos. each. In order to avoid damage on their journey, the bales are wrapped in sackcloth and tied with hemp rope.

THE SISAL HEMP MARKET.

The fact that the German East African sisal hemp fetches a better price in the market than the Mexican sisal is a proof that the German planters cultivated and prepared it more carefully than elsewhere, while its strong resemblance to manilla hemp enables it to be used for many more purposes than the Mexican product. As regards the increasing supply of East African sisal hemp, it will not affect the market, because the demand, owing to the more general use of the agave fibres, increases proportionately. In other words, the home consumption will be able to take much more than the present output. An over-production is not to be feared ; on the contrary, the hemp industry would welcome to-day an increased output of the raw material. The state of the market is, moreover, very favourable to the planter. The

cost of production of a ton of hemp amounts to 400 marks ; the sale price is 700 marks or more. The German East African Sisal Plantation Company have shown excellent results, the last dividend having been fixed at 50 per cent.

At the Third International Congress of Tropical Agriculture, held in London in 1914, Professor W. F. Bruck, Professor of Tropical Agriculture at the University of Giessen, read a paper in the course of which he said that German East Africa was the most important German colony from the point of view of fibre cultivation. Extensive experience, he explained, had hitherto only been gained in German East Africa, where sisal cultivation had been carried out for about twenty-five years. The cultivation had proved most successful where worked on a large scale. Therefore it can only be carried out in a profitable manner by sufficiently well-founded companies. In point of fact, the bulk of this material exported from the colony is produced by a limited number of plantations only. The total amount exported last year was 20,834 tons. Formerly the hemp was decorticated by so-called " raspadores," i.e., simple apparatus worked by hand. Now all large undertakings have given them up in favour of larger machines worked by power. The apparatus most commonly used in East Africa, Krupp's " Corona " machine, decorticates 100,000 to 120,000 leaves daily. The labour question alone, said the Professor, absolutely demands the use of such large machines. Since a single sisal plant produces about

250 leaves during the term of its life, it is easy to estimate that for profitable cultivation of sisal the area available must be very large. The greatest care must be exercised in the choice of a country suitable for the growth of the *Agavæ*. It is not easy to lay down general rules with regard to soil and climate. Many mistakes have been made, and thus large sums have been lost. Altogether, the cultivation of sisal is by no means easy. In conclusion, he emphasised that sisal hemp is, and must probably remain, a comparatively unimportant item in the world's commerce, and that therefore too intensive cultivation might easily lead to over-production.

RUBBER.

Rubber has suffered by the fall of prices and caused the editor of the *German Colonial Gazette* to question whether East Africa will ever be able to compete in this trade against the East, where cheaper cost of production is possible. The German Consul at Dar-es-Salaam, in his last report, writes :—

“ The set-back in the economic development of the colony is a serious one, as rubber cultivation is one of its most important interests, there being probably 19,000,000 trees planted in the colony, of which about one-half are ready for tapping. Owing to the low prices, all the plantations have limited the number of hands employed, and two of the largest have suspended tapping entirely. The planters are heavily handicapped by having to pay the cost of

recruiting labour in the interior and its transport down to the plantation. The costs often amount to about £2 10s. per head, before work is begun, and the rate of wages is high—about 16s. 6d. per month for a Wanyamwezi tapper. Owing to a slight rise in the price of rubber, tapping has been resumed by some of the planters, and there is a more hopeful feeling. The smaller planter has probably a better chance than the large company, his working expenses are less, he can often obtain local labour cheaply or get time-expired hands without paying recruiting fees and, in addition, he can keep his men under more personal control. The outlook for the larger estates is far from reassuring, and it is said that some of them have already begun to cut down the rubber trees to make room for other crops. The Colonial Economic Committee is taking steps to introduce a standard quality of East African rubber, the absence of which is another difficulty that has hampered the planters. There is only one large washing and curing factory in operation in the colony, at Muhesa, though there are several smaller ones in Usambara. Most of the planters wash the rubber themselves, with the result that it has often to be done again in Europe."

The position of the rubber industry is described in the latest British Consular Report (published in May, 1915) as follows: "The area under rubber cultivation in German East Africa increased from 81,705 to 112,257 acres in the year 1912, and the amount of rubber exported increased from 684

metric tons, with a value of £180,500, to 1,017 metric tons, with a value of £362,012. In addition to above acreage under *Manihot glaziovii*, there were 1,010 acres under various other rubber trees. At the end of 1913 there were not far short of 19,000,000 rubber trees in the Protectorate, of which about half were ripe for tapping. The approach of the crisis in the rubber industry due to the over-production of Eastern rubber was foreseen in 1912, but it fell, nevertheless, with unexpected suddenness on the plantations in German East Africa, and will prove a serious set-back to the promising economic development of the colony. The large plantations, with their heavy working expenses, are the worst sufferers, as it costs them about 2s. f.o.b. and 2s. 1d. c.i.f. to produce their rubber. The small planters, many of whom employ cheap local labour, can produce at less expense, and it is possible that they will weather the storm, but the outlook is not reassuring for the large plantations. In response to urgent appeals, a certain amount of assistance has been afforded by the Government, but it is unlikely that any official assistance will enable the planters to effect the very considerable reduction in the cost of production they will require if the price of rubber does not rise. Of this there seems small permanent hope. The improvement of the quality of the rubber exported by the establishment of a standard quality and the planting of crops, such as beans, maize, &c., which yield quick returns, to supplement or even replace

the rubber trees may afford the planters a way out of their difficulties, at least, temporarily."

This story of the failure and disappointment of the rubber industry can be traced to the economic rather than the agricultural side of the venture. Rubber cultivation was proceeding satisfactorily in the Usambara district and the hinterland of Tanga, and remarkable developments were taking place when the activity in the home market was reflected in German East Africa by a sudden increase in the number of the plantations and in the amount of rubber produced. Many plantations were put on the market by their owners, who, in order to enhance the value of their property, extended the planted area with a haste which was detrimental to the value of the crops. Eight rubber plantations passed into the hands of British companies at very high prices ; in fact, the total capital of the British undertakings in the hinterland of Tanga, which are almost all rubber plantations, is about £1,200,000. The value of the exports of plantation rubber had risen steadily during recent years until, in 1910, it took the first place among the exports of the Protectorate. This rapid increase is probably artificial to a certain extent, as, in order to take advantage of the high prices prevailing, many young trees were tapped before reaching maturity, while other trees were over-tapped. At the end of 1910 there were 248 plantations with a cultivated area of 63,990 acres and 20,558,965 trees. Professor Zimmermann, of the Institute at Anami, has published the following

figures as representing the average yields of dry rubber from trees of different ages :—

Age of Trees. Years.				lbs. of Rubber. Per acre.
4	..	..	..	44
5	..	..	..	88
6	..	..	..	132
7	..	..	..	176
8	..	..	..	176

The average number of trees per acre is now about 320.

Practically all the rubber planted is *Manihot glaziovii*, which can be tapped at the age of three years. Other varieties, such as *Kicksia*, *Hevea brasiliensis* and *Ficus* are planted, but mostly by way of experiment. Near Langenburg there is a small plantation of *Landolphia*. No entirely satisfactory method of tapping the trees has been as yet discovered. Most planters have, after various experiments, returned to the original system of collecting the rubber by means of regular series of shallow incisions. The rubber juice exuding through these incisions is coagulated by means of an acid solution on the trees and afterwards collected by hand. There are machines at Muhesa, Mombo and Tanga for cleaning the rubber, rolling it and drying it until it assumes the form known on the market as *crepe*. Most of the rubber plantations are in the Tanga hinterland, but there are a few others near the ports of Kilwa and Lindi, and along the Central Railway. Of the total value of the plantation rubber exports in 1910, Tanga's share was £156,259, as against £8,338 contributed by the rest of the

colony. Of the total export to the value of £180,314 in 1911, Germany took £126,931 and the United Kingdom £52,957.

CEARA RUBBER FAVOURED BY CONDITIONS.

Mr. F. A. G. Pape, F.R.G.S., a planter who has studied rubber cultivation in the Straits Settlements, in Ceylon, Java, Borneo, the Moluccas, Burmah, Siam, and India, has expounded his belief that Equatorial East Africa is one of the finest regions in the world for the cultivation and production of rubber. In a series of articles written in 1910, Mr. Pape points out that Ceara rubber has found all the conditions conducive to the highest and best development in the East Coast of Africa, and that, like the Mexican Sisal plant, which has materially improved in every way in East Africa since it was transplanted there, and now produces the very finest hemp of its class in the world, so has the Ceara rubber tree very essentially improved in its new surroundings. It is not only the geographical situation which tallies, for Mombassa, which is about the centre of the East African rubber regions, is exactly on the same parallel of latitude as the City of Ceara in Brazil, South America.

Ceara rubber has been proved to be an extremely hardy specimen, extraordinarily free from fungoid and insect pests. It will withstand drought in a most remarkable degree. Several cases have been noted where a plantation has withstood a drought lasting for ten months and another of eleven and a half months, without any appreciable injury or

damage. It has also been found that white ants do no damage to the growing Ceara rubber, although they are there in countless myriads and are practically ubiquitous. It is almost impossible to pick up a stone or a branch or grub up the soil without finding millions of them. In dry weather, Mr. Pape tells us, their burrows criss-cross in all directions over the ground. They are in dry blades of grass and up the dead and partially dead trunks of trees. If your house is of wood, they are sure to be in it, and if the walls are of stone, they have their nests and run-ways in them. You may not be aware of it, but you are sure to find it out when they begin to swarm, that is the winged division of them, i.e., the females, just before the setting in of the rains. Out of some imperceptible crevices they will come like a rivulet down a mountain side, and before you know it, a room or the whole house is a nightmare of fluttering wings and noisome insects, crawling all over you and your provisions and your food, and the only remedy is to clear out and leave the field to them until the siege is over. It is a common sight to see—in the dry weather especially—the trunks of the rubber trees covered with a cake of mud, as much as five or six feet above the ground. It is all the work of those tiny insects, the white ants, and they do it in a single night. But when you scrape this rough crust off with a stick, no harm is done to the tree at all, the bark is not even touched, or any incisions or wounds made in the wood at all! Why these marvellous busy-bodies should perform such

stupendous work, for such it is from their standpoint at any rate, and all for nothing, or at least for no visible benefit, has always been a puzzle to naturalists. For it must be borne in mind that all this stuff, which will sometimes fill several baskets, has to be carried in tiny mouthfuls by these diminutive masons from undergrowth up to a height of six feet, and has to be cemented with a sticky substance excreted from their mouths. The solution seems to be that they are after moisture which they hope to find in trees away up from the ground, and as they invariably work and move under cover, these housings have to be erected in their upward advance. Yet when left alone, the white ants will always very shortly abandon the structure and proceed elsewhere. Excepting for the unsightliness, one might as well leave these clay-walls on the trees for all the harm they do. Goats and sheep and small antelope evince a strong distaste for young growing Ceara rubber, and that is why the plantations can be used as grazing grounds for cattle and sheep, &c., with advantage, as they keep the grass down and automatically manure the place and at the same time leave the rubber severely alone. Where wild pigs and porcupines occur it is quite another matter, and stout and careful fencing has to be resorted to. For these animals love to dig up the thick fleshy root-bulbs of the young rubber and devour them with great relish. It is only in the coast region, however, that these animals abound, where they were primarily attracted, and flourished and multiplied by the

numerous native plantations of sweet potatoes and yams and cassava. The undergrowth of the jungle is thereabouts so thick that it affords ready and safe shelter from persecution. Where this latter is cleared away, however, by the hundreds of acres for plantations, and where good watch dogs are kept, these jungle marauders are soon checked and finally cleared out altogether.

CAREFUL CULTIVATION NECESSARY.

A simple and economic but not indispensable system of irrigation is very beneficial in the very early stages of the plantation, when the young seedlings are all the better and will take a better hold if they get a little water all the time. When once they are firmly established they can well wait for the remittent showers of rain, and even then the lateral ditches are very helpful to catch and hold the rain water until it soaks in. When making the ditches it is necessary to be very careful to keep them sufficiently distant from the trees in order to obviate any chance of injuring the roots, which lie rather close to the surface.

If plenty of labour is available and no irrigation has been resorted to, it is a good plan to construct a trench around the trunk of the trees, starting about two feet away from them and heaping part of the earth up against them. But very strict supervision is of first importance in this case to see that the roots are not injured. Under normal conditions the young

trees will be a foot high the first month and about as thick as a slender pencil.

At the end of six months they should be seven to eight feet high and about $\frac{3}{4}$ inches in diameter two feet from the ground, and so on, until at the age of three years they should be twenty-five feet high and about six inches in diameter about two feet from the ground.

Mr. Pape advises the provision of a nursery of some extent, contemporaneous with the planting, from which new plants can be drawn as required to fill the gaps made by missed seeds and the ravages done by birds and insects. In a month or six weeks it becomes evident which seedlings are the most robust and which are likely to lay. The most backward ones can even now be removed with impunity so as to give as far as possible more sustenance to the remaining ones. The gangs of men in charge of the plantation under their head-men and superintendents will now also be fully occupied with weeding, for the plenteous rains will have caused a rank and luxurious growth of grass and shrubs to spring up. Most harmful of these are the convolvuli of their various kinds, the tendrils of which grow a foot or more in length in a single day and night. They twist themselves around the young rubber plants, and if not attended to, strangle them. It is necessary to exercise the most constant care and supervision, and it is stringently required to look after each plant daily to bring it along to a stage of growth, when it may be safely left to look after

itself. This does not come to pass until the plants are about six months old, when they have attained a height of eight feet and are nearly an inch in diameter.

As the Ceara rubber is a deciduous tree and sheds its leaves between the rainy seasons for a considerable period, so that to the uninitiated a hibernating rubber plantation looks sick and dead, is another reason why close planting is permissible. A good deal of nonsense has, indeed, been promulgated by casual visitors to this region about the dead appearance of these trees at such a season, and unfortunately this has, off and on, found its way into print with detrimental and discouraging results, but if these same people had just taken the trouble to prod one of these same trees with a stick only, even high up among the branches, or scratched the trunk with their thumb-nails, they would have been agreeably surprised at the ready and voluminous flow of latex which would have promptly exuded and run from the wound.

THE PROBLEMS OF PLANTING AND TAPPING.

There was in the beginning a good deal of controversy regarding the best mode of planting the Ceara rubber. Some advocated the wide apart method, say, 15-20 feet between each tree, and some counselled a closer cultivation, apportioning five hundred trees to the acre. Some attempts were even made to plant the trees within a few feet of each other, and then gradually, as the plants grew

bigger, to thin the plantation by bleeding the undesirable and superfluous ones to death. However, the results were anything but encouraging, and gradually all "fancy" methods were given up, and the standard is now to plant 400-500 trees to the acre. This procedure has answered the purpose best and has given the best results. The crown of the trees becomes by no means cramped in this way, for the tendency of the branches of a Ceara rubber tree is upwards at an acute angle and does therefore not require any very great spread. Eight to nine feet of intermediate space will be found amply sufficient.

It is generally stated that Ceara *Manihot Glaziovii* is tappable in $2\frac{1}{2}$ years, and even two years, but this is very misleading, as at this age everything depends on climatic conditions. Where the soil is good and the rainfall plentiful it is tappable in $2\frac{1}{2}$ years to three years, but where the soil is poor and the rainfall scanty it is not tappable before $3\frac{1}{2}$ to four years, and even then the trees do not yield the same amount of latex as in the more favourable districts. The latex of the first tappings from immature trees contains a very high percentage of resin, and the product is in consequence of a lower value than that obtained from mature trees. Of course, should the rubber be properly washed, the price fetched would be much the same as that collected from older trees, but the consequent loss in weight would be very high.

Mr. Pape considers that when the trees have

reached the age of two years and four to six months, that is, when they have had five rainy seasons, they are in a normal state ready for the first tapping. If the rains have been copious it is no harm to take from them from four to six ounces of rubber. If the rains have been backward the first figure should not be exceeded, but it is safe to assume that the first crop should yield 125-150 pounds of dry rubber per acre. This yield increases very rapidly, as the development of the tree from one season to another is very rapid and in some cases extraordinary and phenomenal. In the third year the normal Ceara rubber tree will have a diameter of about six inches a foot or two from the ground and will be well over twenty feet high. At the end of the fourth year the tree will show evident signs of maturity. Well regulated and ever slightly increased tapping will have produced a tendency to a steady and ready yield, and at this period the tree will yield and should produce one pound of dry rubber. In the fifth year it will be found that over 75 per cent. of the trees in the plantation will yield two pounds of dry rubber, which will give to the acre a production of three-quarters of a ton of this highly desirable commodity. Unfortunately, the majority of the East African planters still stick to the old-fashioned crude way of gathering and marketing their product, with the result that the prices averaging for Ceara rubber from that region average very low indeed. Yet it has been proven that rubber has been sold from there, which on account of its brightness, strength

and elasticity fetched excellent prices and earned the highest encomiums. What has been done in one instance can be safely carried out right through. "It is, in fact," writes Mr. Pape, "the duty of all concerned and interested that this satisfactory state of affairs should be encompassed all around. And all should endeavour and co-operate to the best of their ability and means to bring this about, and place the East African Ceara rubber into the front ranks of the market, to which it so deservedly belongs. It can surely not have escaped anyone's notice how our competitors in Malaya have laboured and endeavoured in unison almost to a man to bring their product in the best possible shape and purity and at the least possible expenditure upon the market, and have now attained the proud position of being head and shoulders above everybody else. They have naturally in their favour a longer experience and existence, and the powerful aid of large financial resources. We in East Africa are comparatively new-comers, but we have definitely proven that we have found a congenial habitat for the hardiest rubber-producing plant in the world, which is *Manihot glazroom*. Up to date over 12,000,000 sturdy trees of this species in various stages of development bear witness to this, and they flourish on one tithe of the area required for other sorts."

But the tapping has not been sufficiently investigated and is not yet understood. We all know that it requires radically different treatment to the *Hevea* latex for instance, for in contradistinction to the

latter, the latex of the *Manihots* will coagulate very rapidly on exposure to the air even, and artificial fluents have to be employed to keep it liquid for conveyance to the curing-houses. On the other hand, it appears very feasible that a method may be found which will produce clean, technically-pure Ceara rubber in a very cheap and rapid manner. Referring to the subject of rubber-tapping, a writer of experience remarks that all experiments so far have only ended in a return to the most familiar and simple means of stabbing or incising the bark of the trees, which so far has resulted in the best returns with the available labour. "To introduce any new method at the present time would only lower the output. It is very easy to collect beautiful samples in small quantities, but when it comes to quantity, and unskilled labour has to be relied on, the results are quite different. Naturally, the labour question will be brought up as an excuse for the absence of dividends, but this dearth of labour is already well known to the merest novice in the management of German East Africa estates, and also to those who have the handling of the properties on this side."

"The East African plantations are, and will be, worth all the money that has been invested in them, and there are many more like them," says Mr. Pape. "But if the powers that be had been satisfied to put their house in order first and got the properties in up-to-date, first-class condition as a preliminary—and then promised good results—all would have been well, and the satisfaction all around would have never been

shaken or disagreeably stirred over one or two initial mistakes and set-backs. There will now follow a general reviewing and settling down of conditions to the normal, and then a trend upwards increasingly good. Some little capital will have to be spent in various directions to correct errors and mend unsatisfactory conditions and phases. But no one need shirk this, or fear any but a definite improvement in every way."

THE LABOUR QUESTION. .

With regard to the labour conditions on the rubber plantations, they were described in 1911 by a sufferer by them of considerable experience as being "of the worst." Very little change was shown in the labour problem between 1911 and the beginning of the war, and this authority, writing in the former year, says: "Most of the labour employed is free labour, and none of the recruited labourers are indentured for more than six months, this being the limit under the existing laws. Most of the indentures are only for three months, whilst many of them are for one month only, the consequence being that no sooner do the natives begin to understand their work, some becoming experienced tappers, than they return to their own villages in the interior. From the foregoing it will be readily understood that recruiting becomes a very heavy item, and a drain on the resources of the plantation, as it becomes necessary to employ a resident agent in the interior.

"The importance of the labour question is thus

easily understood, and matters are not likely to improve, the competition having recently become more serious than ever. This is accounted for in a great measure by the vendors of the estates already sold having, previous to the disposal of their properties to the British public, applied for and taken up large areas of land in the immediate neighbourhood and planted them up, with the idea of again selling at a profit. The number of labourers on the estates fluctuates from week to week, as they are constantly leaving in batches of from fifteen up to 200 and more at a time. The trouble does not end here, as it is impossible to rely upon more than one-half of the labour force turning out to work daily, owing to the independent character of the natives. There is at present no remedy owing to the lax system in vogue by the Government, and no steps are apparently taken by managers to try and combat this state of affairs. A great deal might be done to alleviate matters if the natives were properly housed and made comfortable, and a store opened at which they could buy their requirements at a reasonable cost.

“Many of the plantations boast of having one-half to over a million trees, and are yearly clearing and planting up hundreds of acres of land, but here again the necessary labour to collect the rubber from millions of trees does not exist. Therefore it would surely be far better and more to the point if they were to use all the labour they have in collecting the rubber from the trees they already possess, and

keeping the plantation clean and free from jungle. The more land they open up the worse matters are likely to become, for rubber in a jungle which cannot be collected is of absolutely no value. Mainly owing to this drawback most of the plantations have been valued and sold at prices far in excess of their actual worth. The shortage of labour has always existed in a very acute form, but has often been passed over when valuing and estimating probable returns.

“To organise the labour force, the first step to be taken is for the different plantation owners to combine and petition the Government to amend present labour laws and to give every assistance to the planters by opening up labour depots in the interior for recruiting purposes. At present, owing to competition, there is no standard rate of wages. A planters’ association should be established, with certain rules, the members agreeing to pay a uniform rate of wages, and to cease trying to entice away one another’s labourers or to engage absconders. One great fault lies in having foreigners to manage what are supposed to be British-owned plantations, bought with British capital. When the plantations were worked by their original owners they were conducted on the most economical lines, but since acquirement by their present owners the management expenses have increased fourfold.”

WILD RUBBER.

The rubber statistics published by the German Government have, since 1908, differentiated between

plantation and wild rubber. Only the latter comes into consideration as far as native production is concerned. The chief area in which wild rubber is collected by the natives lies to the south of a line drawn from Bagamoyo to Ujiji on Lake Tanganyika. The fall in exports in 1908 resulted from the fall in the market price, in consequence of which the natives largely abandoned collection for the time being. With the recovery of prices, however, in 1909 and 1910, and especially during the inflation of the rubber boom, the activity of the natives became very great, but with the return of prices to their normal level this activity, to a great extent, abated. In many districts the natives only collect rubber as a last resort, when the payment of their taxes falls due and no other method of obtaining ready money presents itself. Dar-es-Salaam is the chief port of shipment, the Central Railway having attracted a large proportion of the trade that formerly went by caravan to Bagamoyo. Muansa exported fifty-eight tons in 1910, valued at £17,423. The exports of wild rubber from Dar-es-Salaam in 1909 was valued at £32,273, and in 1910 at £59,497. The total exports of wild rubber in 1910 were 335 tons, with a value of £145,147; in 1911 there were only 172 tons, valued at £58,731. This decrease is to be partly ascribed to the fall in prices, which caused the natives to give up rubber collecting in favour of other occupations, and partly to the fact that the 1910 figures include rubber imported from the Congo and re-exported. This rubber is not included in the 1911

statistics. The drop in the value of exports from Muansa (from fifty-eight tons to four tons) is accounted for by the fact that the Ujiji (Congo) rubber was carried for the first time by the Central Railway instead of going *via* the Uganda Railway. The exports of wild rubber from 1909 to 1912—including the wild rubber exported from the coast ports and that sent *via* overland routes—are as follows :—

			£
1909	..	..	82,565
1910	..	..	145,147
1911	..	..	58,731
1912	..	..	52,915

COFFEE.

The cultivation of coffee in the Usambara Valley was one of the many experiments made by the plucky settlers in their endeavours to find the proper crop for which the region offered an ideal plantation. After proving the unsuitability of tobacco, coffee was tried, and Javanese beans were imported and planted. The results were disappointing, and the slump on the market spoiled the profit that might have been made. It was also discovered that the volcanic soil of the Kilimanjaro-Meru district was more favourable for the crop than the gneiss soil of Usambara, and its cultivation as a staple crop was abandoned in 1910. But in the Kilimanjaro-Meru region from one to three lbs. of coffee can be gathered from trees in the third year of growth. The result

has been that planters have turned their attention from cotton to coffee, and the number of trees planted has increased so rapidly that it is estimated that there were about 2,000,000 trees in that district alone at the end of 1912. The coffee produced is said to be of an excellent quality. In the year 1910-11 there were 3,383,000 coffee trees in the whole Protectorate, of which 1,000,000 had not reached maturity; 133,000 of these trees were in the Bukoba district, and in 1911 the trees in this district had increased to 237,195, and the value of the coffee produced there was estimated at from 4½d. to 6½d. per lb. The growing importance of the coffee crop is illustrated by the following figures:—

<i>Exported.</i>						<i>Value.</i>
<i>German Tons.</i>						£
1899	..	..	50	..	..	4,817
1905	..	..	641	..	..	23,204
1908	..	..	1,010	..	..	47,111
1909	..	..	908	..	..	44,349
1910	..	..	995	..	..	41,887
1911	..	..	1,176	..	..	63,300
1912	..	..	1,575	..	..	95,150

Of the 1910 crop the amount exported *via* the Uganda Railway from the Bukoba district was 412 tons, of the value of £10,733. The falling-off of the amount of the crop in 1909 was due to a bad harvest, caused by parasites.

COPRA.

The latest British Consular Report draws attention to the fact that in those districts where trade

in such products as rubber, ivory, wax, &c., has decreased owing to the centralising influence of the railway, the planting of cocoa-nut palms has been undertaken to counteract the consequent loss entailed. Thus the value of the copra exports from Bagamoyo increased by 165 per cent. ; from Pangani by 171 per cent. ; from Kilwa by 123 per cent. ; and from Mikindani by 119 per cent. Lindi, which formerly imported cocoanuts from Mafia, now supplies its own wants and has commenced to export copra. The prospects for this crop are regarded as distinctly good. Soil and climate are admirably suitable, and the palm is said to flourish not only on the coast but even as far inland as Morogoro and Kilossa, 130 and 181 miles distant from the coast respectively. There is an Arab plantation in Tabora, 527 miles from the coast, but its economic importance is regarded as problematical. The number of palms owned by Europeans in 1912 was 784,458, of which 178,799 had reached the productive stage.

The cocoa-nut palm plantations on the coast and on the Island of Mafia, which are chiefly in the hands of Arabs, have risen considerably in value of recent years, a palm which would have fetched 6s. to 8s. several years ago being now valued at from 16s. to 20s. The average annual yield per tree is about 4s. 2d. The large increase in the value of the trees is due partly to the increase in the demand for the nuts by the native labourers employed on plantations and in railway construction. The greater

portion of the copra exports are sun dried ; two hot air drying installations have been erected in the colony, one at Kilwa and one in the Island of Mafia. The greater proportion of the shipments are made to Zanzibar by dhow. In 1910 copra to the value of £65,064 was thus exported, and of the remaining exports £11,324 were to Germany and £19,024 to Marseilles.

OTHER CROPS.

Other crops, including capok, sugar-cane, tobacco, spices, chillies, and cereals, are grown in East Africa, but the cultivation of these products is comparatively unimportant. Capok, which is employed for stuffing mattresses, &c., finds a market in the interior, where it fetches about 1s. per lb. The experimental cultivation of Turkish cigarette tobacco has yielded no definitely successful results, and the "Boer" tobacco, also grown in the Kilimanjaro-Meru district, sells for only 2s. 8d. per lb., as against 4s. 6d. to 6s. 8d. per lb. which the imported South African variety commands in Dar-es-Salaam. An attempt is being made to cultivate cloves in European plantations in Mafia, and chillies have been grown with success in Wilhelmstal. Maize, wheat, barley, and oats are all raised by Europeans in the highlands, but they find small sale. Potatoes can be grown in the high-lying districts, but the profits are small, and this commodity continues to be imported into the colony from British East Africa. In the Morogoro district the real silk caterpillar (*Bombyx*

mozi) has been successfully reared, and the production of silk from the cocoons of the wild silk caterpillar (*Anaphe*) has been undertaken by the African Silk Corporation in the Bukoba district. The area under cocoa cultivation was 300 acres in 1912, an increase of fifty acres on 1911. Only 175 of the acres were ripe for production, the export being twelve tons, with a value of £699. Millet, especially sorghum, is grown, but only as food for native work-people. There are large tracts of land available for the cultivation of this crop, which has excellent nourishing qualities, but there is little chance of it becoming an important article of export for some time in view of lack of facilities of transport to the coast and high tariff rates by rail and sea. The cultivation of rice by the natives is being widely extended. It is largely grown for home consumption, and is said to be equal in quality to Indian rice, of which nearly 13,000 tons were imported in 1912. The variety cultivated is mostly water-rice, the chief producing district being Muansa, but it is hoped that large tracts of rice-producing land will be opened up by the Tanganyika line. The cultivation of sugarcane shows a tendency to increase in those districts which are adapted for its growth, particularly in Urundi, where about 36,000 canes were placed on the market. Sugar is produced in but few districts to an extent worthy of mention, Muansa being the principal district with a production of twenty-one tons in 1912. The export of sugar in 1912 was

twenty-six tons, with a value of £380 (this included both raw and refined). The export of syrup and molasses declined from 214 tons, with a value of £1,679, in 1911 to sixty-three tons, valued at £580, in 1912. This decline in the export is to be attributed partly to greater consumption in the interior and partly to the competition of cheap Indian molasses.

CLIMATE AND LAND TENURE.

Experience has shown that the large planter has hitherto done best in German East Africa. A planter of four years' standing has, in his plantation, a valuable possession which he can turn into cash at almost any time. The cattle-raiser may own a good herd, but he runs the risk of losing his all, owing to the inevitable cattle diseases, while the small settler—who does not increase in number—lives a precarious hand-to-mouth existence, without much hope of amelioration in his condition and with the prospect of serious loss in the event of illness.

It must be borne in mind that even in the highlands the climate cannot be compared with that of Europe. The climate on the coast, where the air is heavily charged with moisture, is hot and enervating. There is always a certain amount of fever, and the coast towns cannot be regarded as satisfactory places of permanent residence for Europeans. The highlands in the interior are, however, for the most part healthy. The nights are always cool, and in some places mosquito nets can be dispensed with.

At the same time, some of the favourite districts for European settlement are not free from reproach. Malaria exists in the Kilimanjaro-Meru district, and in Leganga, the centre of the settlement district of the Kolonial Gesellschaft, which is 4,500 feet above sea level, malaria is endemic. On several of the European rubber plantations, which appear to enjoy an immunity from mosquitoes, cases of fever are frequent.

Under German rule Crown land was obtainable from the Government on certain conditions. Land was not sold outright in the first instance, but leased at the rate of 5 per cent. of the sale price of from ten to 100 hellers (100 hellers=1s. 4d.) per hectare per annum. The condition attached to leasehold was that cultivation of the land must be commenced immediately and be extended at the rate of one-tenth of the land annually, and that it could not be purchased until at least half had been brought under cultivation. Pasture land was obtainable on the sole condition that the land was fenced with wire or quickset hedge. The number of contracts under which land was taken up on lease in 1910 was 139, of an area of 183,275 acres. In 1909 only eighty-six contracts were made, with an area of 80,750 acres. Sales of Crown land (i.e., all unowned land) to private individuals were as follows:—

	<i>Sales.</i>					<i>Acreage.</i>
1908	35	..	..	21,722
1909	50	..	..	28,900
1910	121	..	..	94,907

The number of planters who, having fulfilled the necessary conditions, are allowed to purchase the land held by them on lease has steadily increased. In 1909 the favourite district was the Rufiji. In 1910, owing to the speculation in rubber, the demand for land was most lively in the districts of Tanga, Pangani and Wilhelmsthal.

THE ORGANISATION OF EXPERIMENTAL WORK.

FROM an article on "The Organisation of Experimental Work in Agriculture in the German Colonies," by Dr. Walter Busse of the Imperial German Colonial Office, which appeared in the *Bulletin of the Imperial Institute*, one learns that experimental work in almost every branch of agriculture was enthusiastically undertaken by the various Colonial Governments. The system of study, research and experiment was found to be of particular service to the farmer, settler and planter in the performance of their most difficult work, in demonstrating how they could procure the highest possible return upon their farming operations, and in raising the agricultural output of the natives and increasing the agricultural prosperity of all the German over-seas dominions. "Our experimental work," Dr. Busse explains, "serves ultimately the self-evident demand for a sound national trade policy, especially by encouraging in our colonies the production of those raw materials which Germany must still draw from foreign lands for the sustenance of its people and industries."

In East Africa the Biological Agricultural Institute at Amani, in the Usambara Mountains, was founded in 1902, and after the creation of a Department of Agriculture in 1909, it became the centre for the organisation of the agricultural staff which dis-

charged all official duties connected with the development of agriculture in the Protectorate. District agriculturists were appointed in Bagamoyo, Dar-es-Salaam, Kilwa, Lindi, Kissaki, Morogoro, Rufiji, and Tabora, and five effective experimental stations and one experimental fruit farm were established. In 1913 the white agricultural staff of the colony consisted of fifteen first-grade, ten second-grade and five third-grade officers. The purely scientific researches were conducted by the Biological-Agricultural Institute itself with the aid of a director, two chemists, two botanists, a zoologist, and several gardeners. The scheme of work comprised the introduction and cultivation of tropical economic plants, scientific research and experiment in the interest of the planting industry of the colony, the study of plant pests and diseases, manurial experiments, soil analyses, technical research on the more valuable indigenous products, and the holding of courses of instruction for planters.

WORK ON THE VARIOUS STATIONS.

The Kibongoto Agricultural Experiment Station at Kilimanjaro, founded in 1911, served primarily the special needs of European planters in the Kilimanjaro and Meru Mountains. It carried on all branches of agriculture (tillage operations, plantation culture, management of pastures and breeding of cattle), and conducted cultivation experiments with cotton, Turkish tobacco, coffee, cereals, leguminous crops, and other vegetables. It also experimented

with the raising of local races of cotton and the most important kinds of grain, with fodder plants for the improvement of pastures and the hay crop, and with green manures. The European staff consisted of a manager, who was an agricultural expert, a trained scientific assistant and a Turkish tobacco planter, and special experiments were undertaken with the cultivation, curing and fermentation of Turkish tobacco.

Between 1810 and 1812 three special experimental cotton stations were established in the Protectorate for the purpose of (a) Comparative cultivation experiments with different species and varieties of cotton with a view to deciding which of the better-known kinds were most suitable for local conditions ; (b) Breeding experiments for the production of more valuable varieties and local races from specially suitable kinds of cotton by means of continued individual selection, and the increase of the best sorts by mass selection for the production of seed ; (c) Rotation experiments with various other crops ; (d) Experiments on the proper working of the soil and on green manuring ; (e) Observations and experiments concerning cotton diseases and pests. In addition to this general scheme of work, the chief officials of these stations had to advise the European cotton planters in their respective districts, while their assistants acted as travelling instructors to the natives. At the Mpanganya Station, on the Rufiji River, in the Mohorro district, school instruction was provided for the natives, and both there and at the

Myombo Station, near Kilossa, and the Mabama Station, near Tabora, experimental work on lines indicated above was conducted.

At the Morogoro Station for fruit culture, founded in 1910, the programme comprised the cultivation of tropical fruit trees and the distribution of young plants to Europeans and natives.

Although the Germans were only at the commencement of their agricultural development work in Africa when their activities were diverted into other channels by the outbreak of the war, Dr. Busse expressed the hope that they were at least proceeding on the right lines. "An inexperienced colonising people undoubtedly meets great difficulties at the beginning," he admits, "when its own knowledge of tropical lands is small. Germany has adopted two methods to overcome these difficulties; the first is to learn from the older, more experienced colonial nations, and to bear in mind the experience that has been gained during the lapse of years in foreign dominions. For this purpose experts of the German colonial service have carried out studies in various parts of the world, and, as we gratefully recognise, have received much courteous assistance from foreign governments and private persons, so that they have, in each case, returned richly informed. The second method is to transfer to colonial agriculture as far as possible the long-approved system of German agriculture, which rests on a strong scientific foundation, built on the results of exact investigation and methods. In this, however, one

has to guard against indiscriminate transfer to the equatorial regions of practice peculiar to European conditions. The rational methods of German agriculture, perfected by the long and assiduous work of generations, have to be very largely transformed into new methods and systems for employment in the tropics. By this means the German Colonial Government has kept pace with the present-day organisation of agricultural experimental work in the colonies."

CATTLE.

The natives of German East Africa pay little attention to cattle breeding, but in spite of the diseases from which few districts are free, and the spreading of the dreaded tsetse fly, it is reported that cattle are on the increase. In 1910 the cattle in thirteen districts were counted, and an estimate made of the cattle of the rest of the colony. The totals thus arrived at were 1,489,178 head of cattle and 2,793,437 head of sheep and goats. Cattle breeding by Europeans has made but little progress, the failure of the various experiments being attributed to lack of system. The number of cattle owned by Europeans in 1912 was 43,617, and that of sheep and goats, in the breeding of which no progress has been made, was 41,647. Horses numbered 202, mules 375 and donkeys 2,543.

Malignant catarrhal fever and coast fever are the two endemic diseases which affect all the cattle, with the exception of the Ruanda cattle, which are immune from coast fever and cannot spread the

infection. The serious outbreak of rinderpest towards the end of 1912, which probably entered the Protectorate from British East Africa and swept southward, was arrested at the Ruaha River. Although it was less virulent than in previous outbreaks, the rate of mortality varied from 10 to 70 per cent. of the cattle affected.

Experiments made with wool-bearing sheep and with Black Forest goats have failed from a lack of practical knowledge, but pig breeding has been tried with better success, and the animals have increased their numbers to a satisfactory extent. Ostrich farming in the colony has not yet been attempted, but the local bird is said to produce a high quality of feather, and there seems no reason why ostrich farming should not be successfully undertaken.

MINING AND MINERALS.

THE receipts of the mining department for prospectors' licences, taxation on output, &c., have increased from £748 in 1908 to £1,062 in 1910. At the end of the latter year there were seventy-six prospecting fields in the Protectorate on which 111 claims had been taken up. In 1909 operations were begun at the Kironda Mine, near Sekenke, in the Iramba plateau. In that year 3,515 tons of ore were crushed, and 176 kilos. of smelt gold and 139 kilos. of fine gold produced. In 1910 7,333 tons of ore were crushed, 429 kilos. of smelt gold and 347 kilos. of fine gold produced. The operating company employs twenty Europeans and 700 natives. The output of gold has commenced in one place in the Muansa district, where there are also several gold-fields marked out for ownership, on which operations have not yet commenced. In 1909 111 kilos. of gold ore were exported, in value £11,988; in 1910 378 kilos. of gold ore were exported, in value £42,134. In 1911 the gold output increased to 450 kilos., but in 1912 it fell to 234 kilos. This gold was mainly obtained from the Kironda Mine, where veins of gold-bearing quartz occur in association with intrusions of diorite and quartz-diorite. Stamp mills are in use, and the gold is presumably won chiefly by amalgamation in connection with these mills, though some of it is also obtained by cyanide treatment.

The average yield of gold per ton of ore mined at the Kironda has been as follows :—

					<i>Grammes per ton.</i>
1909	..	..	..	..	38'90
1910	..	..	..	..	46'45
1911	..	..	..	..	45'92
1912	..	..	..	..	29'29

The Iramba plateau consists chiefly of granite, but partly of schists, and these rocks are traversed by dykes and veins of diorite and pegmatite. At some localities there occur numerous quartz veins that carry gold. These gold-bearing quartz veins are usually small and variable in character. At and near the surface the deposits are fairly rich in gold, but this is due to surface enrichment, and they are found to become much impoverished at even shallow depths. Samples of gold-bearing quartz at a depth of from ten to twenty metres were found to contain 129 ozs. of gold per ton; whereas samples of the sulphide ores from a depth of from thirty to forty metres were found to contain not more than a few pennyweights per ton.

Gold deposits closely resembling those of the Iramba plateau occur in the Ikoma goldfield, some sixty miles east of Speke Gulf (Victoria Nyanza). This area is occupied by gneiss and hornblende schists, the gneiss being predominant. The hornblende schists are traversed by gold-bearing quartz veins. Some of these veins are small, and recall the Iramba type; others are of more considerable dimensions.

Near the village of Sargidi, a short distance north of Ikoma, and near Nassa, on the south-east of Victoria Nyanza, gold-bearing quartz veins of the Iramba plateau type have been found.

At Ussongo, in the northern part of the Tabora district, a porous ferruginous breccia containing about one oz. of gold per ton has been observed ; and at Ssamuje, to the north of Ussongo, there occurs itabirites and mica schists which are traversed by gold-bearing quartz veins.

Gold has also been found in alluvial deposits near the headwaters of the River Umbekurui, which flows into the Indian Ocean and separates the Kilwa and Lindi districts in the south of the Protectorate.

FUTURE OF THE GOLD INDUSTRY.

Very little is yet known about the auriferous possibilities of German East Africa, but a number of Rand mining men, who have visited the colony, speak favourably of its future as a mining region. Mr. H. Loret, an ex-mine manager of the Rand, who was sent to report upon a property, the location of which was not divulged, is said by the *South African Mining Journal* to have found it unattractive, but that he was able to peg out for his syndicate certain gold-bearing claims of greater promise. Another ex-Randite, Mr. Jeffries, who made a long and adventurous prospecting trip in the colony, declares that the country is traversed by a well-defined gold-bearing belt, but as no geological survey has been made, the value of the discoveries can only be guessed

at. Gold is not the only mineral found, as tin, copper and mica have been traced. The Sekenke Gold Mine is producing and paying dividends. Mr. Jeffries speaks enthusiastically of its prospects, the value at 500 feet vertical being over two ozs. per ton. Water is abundant. During the dry season most of these rivers are partially dry, or water stands in big pools, but by digging five or six feet in the sand, clear running water will be obtained, and this method is adopted by the natives for watering thousands of cattle. In many parts very fine mining timber, chiefly acacias, can be had for the price of cutting it down. As the country is thickly populated, and boys are to be had from 5s. to 8s. per month, inclusive of food, no difficulty will arise on this point for many years to come. At the Sekenke Mine and at Lassama, Mr. Loret saw the natives working underground, and was told that these natives take very kindly to mining and have no fear of going underground.

A correspondent writing in a Queensland paper says: "I have just returned from German East Africa, and I was fortunate in discovering a very fine gold reef of large formation, about twelve yards wide: the lode can be traced for over a mile. I have pegged 164 acres, and intend returning again in a few days, when I hope to locate other reefs. This is in a new district, and from what I have seen will be the best find here. There will be a move here before long in mining. I hear that in German East Africa tin has been found, and in three months' time I hope to go to a part for tin—it will take beating, judging

from specimens I have seen. It is very difficult prospecting here during the wet season, as the long grass is so high, but in the dry season it can be burnt off, and it is then a picnic prospecting. A prospector living here must be fairly strong."

THE MICA DEPOSITS.

Other economic minerals in German East Africa are mica, garnet, coal, iron, uranium minerals, copal, trona, and salt. All these exist in such quantity that they have either been already worked or will prove worthy of consideration under suitable conditions as regards transport facilities. Mica, gold and garnet have been exported almost wholly to Germany in the past; while most of the copal has been exported to Zanzibar and England.

Mica of the muscovite variety occurs in pegmatite veins that traverse gneiss in various parts of the Protectorate. An occurrence is reported in the Ssuwi Stream, which drains the northern slopes of the Pongwe Mountains in the Bagamoyo districts. Other localities for mica are Mkondami, in the Nguru Mountains; Tangiro and Mount Fissage, in the Mahenge district; and the Uhuguru Mountains, in the Morogoro district. Still other localities worth mentioning as showing the widespread distribution of pegmatite mica in the Protectorate are Mombo, in the Usambara district; the Woto plateau, in the Langenberg district; and Mawa and Muera, in the Lindi hinterland.

Of these various occurrences the most important

are those at several places in the Uluguru Mountains, and it is these that are chiefly mined. The predominant rock in these mountains is a biotite gneiss. The gneiss is cut by numerous veins of pegmatite, which dip vertically or at slight angles up to seventy feet or so. The mica is of the muscovite variety; it is typically of a greenish or greenish-brown colour, and is highly transparent in thin plates. The chief mica localities in the Uluguru Mountains are those on the Mbakana River in the southern part of the range, and those to the north of Morogoro at the northern end of the range.

On the Mbakana there is at one locality a mica-bearing zone of pegmatite stone some ninety feet in length with a maximum width of eight feet at the surface. At a depth of sixteen feet the width increased to over fifteen feet. Mica has been found here in sheets measuring about a square yard in area; and plates, quite free from flaws, measuring up to about $1-1\frac{1}{2}$ feet have been obtained.

Associated with the mica in these Uluguru pegmatites are the minerals uraninite (pitchblende), rutherfordine, samarskite, galena, zinc blende, bis-muthinite, copper pyrites, iron pyrites, arsenopyrite, garnet and tourmaline.

The mica of German East Africa is highly valued for use in electrical insulation, for which purpose it is as good as ordinary Indian muscovite and Canadian amber mica, though it is substantially inferior to the best Indian ruby mica.

The total amount of mica exported from the

Protectorate during 1912 is given as 153,806 kilos., an increase of 55,507 kilos. as compared with the output for 1911. Except 560 kilos., which was exported to Zanzibar, the whole of the mica exported during 1912 was sent to Germany.

Almandine garnets of value as gemstones occur in hornblende gneiss at Namaputa, in the Lindi district, a little to the north of the Rovuma River, in the south-eastern portion of the colony. The garnets are easily obtained from the surface rock, and they are also found loose at the surface. They are described as having a fiery columbine-red colour. They are stated to have occurred abundantly as specimens of good quality and to have been well received on the market. Recently, however, garnet mining seems to have been almost at a standstill, the output in 1912 having fallen to 8 kilos. from 154 kilos. exported in the previous year.

COAL AND IRON.

Coal-bearing karoo strata occur in various parts of the plateau highlands, notably in the area surrounding the northern portion of Lake Nyasa ; and these strata contain coal beds. Many of these beds are thin, and consist of coal of poor quality, as, for example, those near the mouth of the Ruhuhu, on the east side of Lake Nyasa. On the other side of the lake, in the British Protectorate of Nyasaland, and opposite the Ruhuhu, are the coal-bearing Karoo beds of Mount Waller. More important than these Ruhuhu deposits, however, are those in the Karoo

beds to the north-west of the lake on the Songwe and Kivira rivers. In this area a section of the Kandete stream shows a thickness of eleven metres of coal in a total thickness of 20·7 metres. One portion of this section shows a seam of coal 4·90 metres thick with two thin shale partings, which together have a thickness of only six centimetres.

The average composition of the coal of this 4·9 metres seam is as follows: Carbon 60·60, hydrogen 3, oxygen 13, sulphur 0·25, moisture 4·33, ash 18·50 per cent.; the yield of coke was 78·70 per cent., and the calorific value 5·657 calories. Certain of the seams show a higher percentage of carbon, up to 70 per cent., and a calorific value of 6,840 calories. The ash in some samples falls as low as 5 per cent. The coal is of the bituminous type, and is of considerable value as fuel, and on account of its coking property could be used also for smelting iron ore.

Iron ore of the lateritic type occurs at the surface in many parts of the colony, and is smelted in a primitive way by natives at the Ndapa, in the Livingstone Mountains, north-east of Lake Nyasa. Hematite ore occurs in the Upangua district, at the southern end of the Livingstone range, and near Lake Nyasa. Magnetic iron ores (some of which are titaniferous, however) occur in thick bands in the gneisses at various localities. Notable among these are the occurrences in the Uluguru range. In the Mbakana stream titaniferous iron ore with as much as 25 per cent. of titanium dioxide occur. Iron ore,

including magnetite and hematite varieties, have also been found in some quantity at Midindo, near Mamboya. Magnetic iron ore and limonite occur also in the Ruanda district and other places in the region between the Victoria Nyanza and the northern end of Lake Tanganyika, where they are to some extent worked by natives.

Associated with muscovite in the pegmatites of the Uluguru Mountains there are uranium minerals containing a high percentage of uranium, and therefore of importance on account of their radio-active properties.

At many localities on the coastal plain and near the coast, as on the Noto, Makonde and Muera plateaux, fossil resin of the copal variety is dug from the surface sands by natives. The pits from which it is obtained are very shallow, being dug to a depth of not more than two feet. The winning of copal in this way is sufficient to repay the labour of the natives, who send the copal to Lindi and other markets on the coast. The product comes on the British market *via* Zanzibar, and is known here as Zanzibar copal. There has been a gradual decrease in the exports of copal during recent years, except in 1912, when there was a small increase to 106 tons, worth nearly £6,000. Partly owing to the extent to which the copal-bearing alluvium has been already worked, and partly owing to the fact that there are other and more remunerative fields of labour for the natives, it is not expected that this increase will be maintained.

NATIVE POPULATION, LABOUR AND EDUCATION.

THE native population of German East Africa is estimated at between seven and eight millions belonging, broadly speaking, to the Bantu tribes. In the past these settled tillers of the soil were harried by warlike nomadic tribes, such as the Zulus, the Watussi and the Masai, and until the German occupation the agricultural population were continually attacked and plundered by these warriors from the south and the north. In olden times the natives living in the immediate neighbourhood of the Masai region dared not call his cow or his life his own, and the German authorities banned the Masai to a reserve, realising that this step was absolutely necessary if the country was to make peaceful and economic progress. Among the oldest inhabitants of the country are the Wasagara, in Usagara ; the Washambara, in Usambara ; the Wanika, slightly to the north ; the Wagogo, in Ugogo ; the Wahehe or Mafiti, between Songea, Mahenge and Iringa ; the Wanyamwesi in the neighbourhood of Tabora ; the Wasekuma, in Muansa ; the Wadshagga, on the slopes of the Kilimanjaro ; and the Wahutu, in Ruanda. The members of these tribes are of well-developed stature, and the colour of their skin varies from brown to black. Very strong men are to be found among them, more particularly among the Wanyamwesi, that ideal porter or " coolie " tribe,

which is also noted for its aptitudes at tilling the soil and cattle-raising.

On the coast are to be found the so-called Wasuaheli, who, as generally happens in the case of coastal tribes, are not of pure descent, having been freely contaminated by foreign blood, mostly that of Arabs. Ever since the Middle Ages Arabs have migrated into the country from Muskat, and Arabs were the predominant race in German East Africa until the advent of the Germans. The Msuaheli adapts himself easily to his surroundings, and is therefore in request as a servant. The blunt, naïve manners of the native living in the interior are as foreign to him as are the characteristics of the German peasant to the German townsman. His language, the Kisuaheli, containing many words of Arabic origin, is the universal trading idiom of half equatorial Africa. Each tribe in the interior has its own dialect, but only the very old inhabitants—and they are rapidly dying out—are unable to understand Kisuaheli ; as for the younger natives, they all understand it, and the majority speak it.

The average density of population is approximately eight to the square kilom., excluding the area between the great lakes. The pacification of the country tends to produce a more equal distribution of population than under the old conditions of tribal warfare, but there are still districts where the inhabitants are very few, e.g., one-third of the large central district of Tabora is still totally uninhabited. The ever-increasing plague of the tsetse-fly has denuded

some districts formerly rich in cattle. It is hoped that the march of civilisation, by introducing sources of water supply, combating the tsetse, and eradicating sleeping-sickness and other diseases, will so extend the inhabitable area that the population will have room for increasing manifold. The chief causes which operate against the increase of the population, since the cessation of tribal warfare, are lack of proper food for and treatment of young children, abortion, syphilis and other diseases, and the employment of the men as porters or on plantations away from their families. The work of the medical authorities and the abolition of much portage by the introduction of railways, as well as the provision of means for plantation workers to be accompanied by their families, should gradually remove, at least partially, these main hindrances to the increase of the population.

The settled natives cultivate their land with rice, maize, groundnuts, bananas, sweet-potatoes, sugarcane, beans, and, to a certain extent, with coffee and tobacco, according to the suitability of the soil. The cultivation of cereals is mostly carried on for home consumption owing to the absence, in general, of a market for surplus production. Where, however, a market does exist, or where the concentration of numbers of workpeople in one district creates a demand for food, it has been proved that the native will increase his output of his own accord. More recently an attempt has been made to get them to grow cotton, but, if the truth be told, the materially-

mind native prefers to grow crops that represent food rather than crops that have to be converted into money before they can supply his wants. It must be borne in mind, when considering the "incorrigible" idleness of the native, that he has little comprehension of the mysterious fluctuations of prices in the world market, and is, therefore, easily disheartened by a sudden fall in the value of his productions. He thinks he is being cheated when the European offers him a lower price for his crop than in the previous year, and gives up cultivation. Again, he has little idea how to compete with transport difficulties and bring his crops to a distant market. The cultivation of large tracts of land is in itself specially difficult in a land where the crops as they ripen must be constantly defended against the depredations of pigs and hippopotami at night, and of birds and monkeys by day.

NATIVE ARTS AND ORNAMENTS.

Industrially, certain tribes are remarkably clever. In the days of the powerful chieftain Sinna, a school for teaching the art of manufacturing spears existed in the Kilimanjaro district. The Jagga spears are known for their excellent workmanship, as are the Masai spears. On the coast beautiful mats are made, and throughout the country are to be found richly decorated gourds used for water, *pombe* (native beer), or *tembo* (palm wine). These gourds are frequently of quite an original design, artistically etched with a red-hot needle or decorated with pearls and "cami"

shells. Quite tasteful at times are the personal ornaments of the natives and some of their utensils, such as the carefully carved ivory snuff-boxes, which are generally worn around the neck. Necklaces, bracelets, and anklets are manufactured of copper and brass wire. Combs, statuettes, and stools are carved out of wood with considerable talent. Not less original are pottery articles, the greatest adepts in the art being the Washambara, who manufacture all sorts of clay figures, pipes, statuettes, &c. Both music and dancing are eagerly cultivated. In years gone by the drum was to be heard every evening in every village throughout the country, on moonlight nights the noise continuing until daybreak. The drum is beaten with the palms of the hand, and is accompanied by singing and dancing. Sometimes, owing to the size of the drum, the noise is extraordinarily loud, but generally speaking the rhythm of the songs is melodious.

THE LABOUR MARKET SYSTEM.

It is difficult for the outsider to realise that, in a colony with so large a native population, a real labour scarcity can exist, but the fact remains that the labour problem in South-East Africa is one that the authorities have not yet solved. The tribes most popular with European plantation managers are the Wanyamwesi, from the Tabora district; the Wasukuma, from the shores of Victoria Nyanza; and the Wairamba, from the Iramba district in the south. These are employed largely on the planta-

tions in the hinterland of Tanga, but although the number of planters is few, they find it impossible to get all the labour they require. As the British Vice-Consul explains, the existence of large masses of the population who are dependent upon employment by capital for their daily bread, is a state of affairs unknown in East Africa. The natives have their own small farms, which they cultivate sufficiently to satisfy their few wants. Nature is bountiful, and it is often difficult to persuade the native, whose ideas of the dignity of labour are crude, to leave the cultivation of his own plot of land to work on some distant plantation under a European master.

In these circumstances the acquisition of labour is often difficult and expensive. Under the German system natives were obtained by a licensed recruiter and enter into a contract in the presence of the district officer, who satisfied himself that they understood their destination and the terms of their contract. A deposit of 5 rupees was made with the officer for each man recruited in his district, and the men brought to the plantations by rail as far as practicable. It costs the plantations in the Usambara Valley about £2 13s. 4d. per man on the plantations. Contracts are made for 180 days, but the men must be released at the expiration of nine months whether they have worked for 180 days or not. About 50 per cent. return to their homes when their contracts are ended, about 25 per cent. stay on to work, with or without renewing their contracts, while 25 per cent. wander away to other

plantations. Wages in the Usambara Valley are from 12 to 15 rupees per month ; a weekly advance must be made as food-money.

About three years ago special officials were appointed in several of the districts where labour is most employed, e.g., the Usambara Valley and along the Central Railway, whose duty it was to superintend the relations between employers and labourers. The Government also came to the help of the planter by introducing regulations, under which a definite rate of remuneration was fixed for the labour recruiters, definite districts were assigned to these men for their operations, and the period of time for which labourers may be engaged was extended from six months to one year.

In the district of Dar-es-Salaam an experiment was made with "labour markets." Planters report to the district officer the number of hands required. With the assistance of the local chiefs, as many natives as possible willing to work are assembled at some convenient centre, where the planters can come and make contracts with the men directly. The natives who report for work do so voluntarily. The matter is arranged by the district officer, the labour recruiter is dispensed with, and the total cost to the plantations of procuring their labour is less than 1 rupee per annum. The system appears to work satisfactorily, at least locally.

According to the latest Consular Report, it is doubtful whether any final solution of the numerous difficulties is possible in the near future. It is the

opinion of many that if the native is not to be compelled to work by law he must either be taxed until he is forced to work to pay his taxes, or else he must be raised to a higher state of civilisation, when he will acquire fresh wants which can only be met by earning wages from Europeans.

In his "Thirty Years of German East Africa," Hans Zache says : " It is a falsely reasoned and falsely proved humanitarianism which seeks to take no cognisance of the education of the native for manual work. Work is provided by the European planters so that the colony may benefit by increased production, and not least also is it provided for the blessing of the negro." The blessing accruing to the native from the humanitarianism practised upon him by his German master may be questioned, but the endeavours to provide the negro with education are more manifest.

THE EDUCATION OF THE NATIVE.

In 1911 when the German Colonial Institute desired to ascertain the work done by the Government and the Missionary Societies in the way of educating the natives in their African colonies, they sent out over 2,000 printed *questionnaires* to the various persons in authority at the several schools, and from the answers returned Herr Schlunk, of Hamburg, prepared a report in book form. The value of the result depends upon the fulness and intelligence with which the answers were framed, and Herr Schlunk had to announce that the replies

he received from the authorities in East Africa were so vague and incomplete that it is impossible for him to give the exact number of schools and pupils in the colony, or to supply any definite information concerning the plan of instruction pursued. The educational work was in the hands of the Government and twelve Missionary Societies, nine of which were Protestant and three Roman Catholic.

The Government had seventy-eight elementary schools, with three European and ninety-five native teachers and 3,494 pupils ; two higher schools, with five European and fourteen native teachers and 681 pupils ; and three industrial schools, with three European and four native teachers and 137 pupils. The Roman Catholic Missions appear to have had 363 elementary schools, with 115 European and 459 native teachers and 31,274 pupils ; eleven higher schools, with twenty-eight European and eleven native teachers and 724 pupils ; and five industrial schools, with thirteen European and one native teacher and sixty-one pupils. The nine Protestant Missions, of which six were German, two English and one American, had together 512 elementary schools, with ninety-four European and 646 native teachers and 29,716 pupils ; eighteen higher schools, with sixteen European and twenty-six native teachers and 472 pupils ; and nine industrial schools, with ten European teachers and eighty-eight pupils. Altogether there appeared to be 1,001 schools in the colony, with 287 European and 1,256 native teachers and 66,647 pupils.

THE COURSE OF INSTRUCTION.

From the scantiness and vagueness of the information supplied in the German Colonial Institute report upon the course of instruction obtaining at the several schools, it is evident that the authorities connected with them either misunderstood the drift of the questions or practised a curious reticence in answering them. In the elementary schools the curriculum seems to have varied considerably. In sixty-eight of them no instruction was given in arithmetic, while in others zoology and drawing were taught in addition to the ordinary elementary subjects. The higher schools continued the instruction given in the elementary schools. In seventeen additional "Schools for Practical Work," twenty-eight European and thirteen native teachers imparted to 286 pupils instruction in building, carpentering, cabinet-making, printing, book-binding, brick-making, smiths' work, and tailoring, while in one school the girls were taught laundry work and the boys ironing. Sewing and cooking classes were also held, and, in most schools, lessons were given in farming and horticulture. The object of these "practical work" schools was "to turn out artisans for the Europeans, and women for domestic work, to develop old Arab handicrafts, and introduce new culture."

The cost of educational work was borne entirely by the Missions and the Government for their respective schools, an attempt to obtain fees from

pupils having, apparently, failed to produce revenue. No particular school hours are specified, and the days of the week on which school was held ranged from one to six. The practice of the compulsory learning of German which had obtained in the schools of every other German African colony was not followed in East Africa. In fact, the educational system in this colony was so casual and harmless that the ill effects which it produced among the natives of Germany's other colonies appear to have been non-existent.

RAILWAY DEVELOPMENT.

THE TANGANYIKA LINE.

GERMAN East Africa has undergone remarkable development during recent years, and at the outbreak of the war it had passed safely through the first critical stages in the history of its progress. The cultivation of Ceara obtained an enormous impetus from the rubber boom, and the success attending the planting of sisal and coffee served to further increase the exports. Even the commercial crisis of 1907 was practically powerless to impede the expansion of trade, and large new areas have been opened up for the acquisition of labour and the extension of European cultivation. The actual budget receipts from the Protectorate itself have increased from £160,900 to £623,750 during the last ten years, and the Imperial subsidy, which has decreased from £246,600 in 1902 to £180,900 in 1912, has been limited to the expenses of the military establishment in the Protectorate. Dar-es-Salaam and Tanga have grown into important towns, with handsome buildings and well laid-out streets. The white population of the former is about 900 and that of the latter town about 300.

Perhaps the most remarkable development of all has taken place in the direction of railway construction, and the regions served by the lines have made extraordinary progress. Of late years, and especially

in 1913, the Tanganyika Railway, begun in 1907, was extended from Tabora to the Lake, where the terminus at Kagoma was reached on February 1st, 1914. Before war was declared Parliament had agreed to construct a branch of this line from Tabora, 300 miles into the densely-populated and fertile regions of Ruanda and Urundi. The administration of the line is nominally in the hands of a company, but nine-tenths of the shares have been bought by the Government, and it is therefore practically a State railway. The Usambara Railway was started in 1896 by a private company, which, fighting against extraordinary obstacles, constructed forty kilometres. Then, owing to lack of funds, work had to be stopped. The Government took over the line and added another fifty kilometres to Korogwe (1902), Mombo was reached two years later, Buiko in 1910, and Neu Moschi, at the foot of Mount Kilimanjaro, in 1912.

Dar-es-Salaam which, a dozen years ago, was a dirty negro village, flanked with the grey stone houses of slave dealers and a few bungalows built by European settlers, is to-day a clean and imposing residential town, laid out with handsome squares and avenues, and furnished with handsome churches, hotels and public buildings, and neat, white, tropical buildings. The "Harbour of Peace" still shelters the native craft of dhows, but majestic liners now ride on its well-sheltered waters, and the lions which used to ravage the native quarters have disappeared

before the incursion of the electric light and the iron road.

CARAVAN TRANSPORT.

When the Germans first came to East Africa, Bagamoyo was the mainland port for Zanzibar and the emporium for much of the ivory, wax, rubber, copal, &c., collected from the interior. Here were congregated the European firms and the important Indian and Arabian merchants who despatched their caravans with brass-wire, powder, stuffs, &c., into the hinterland, to Uganda and the Congo. Thousands of bearers were wont to assemble in Bagamoyo, and in the 'eighties and 'nineties from one to two hundred thousand Wanyamwesi alone were available as bearers. This carrier-traffic, though labour was plentiful, could only handle valuable loads in order to be profitable to the merchants. From October 1st, 1903, to September 20th, 1914, 241 caravans with 7,064 people and 6,222 loads arrived in Ujiji from the coast, and about the same number of people and loads made the return journey. The great expense entailed by this class of transport could only be covered by the conveyance of valuable products, as each load of from 50 lbs. to 60 lbs. in weight cost from £2 to £2 10s. to send forward.

The carriage of a ton of 1,000 kilos. required forty bearers and cost £50, apart from the loss of interest on three months' transport. Ivory, rubber and such-like durable products could bear this expense, but in the case of maize, salt, rice, &c., such

prices were prohibitive. In order that this class of produce could be made marketable, a cheaper method of transportation was necessary. Already in 1891 the project of a railway starting from Dar-es-Salaam was under consideration—Bagamoyo, on account of its inferior situation and accommodation as a port was already doomed; but only in 1895 an arrangement was concluded between the Imperial Government, the German East Africa Company and the German Bank, by virtue of which the preliminary work in connection with the railway was commenced in the following year. But the lack of interest in the scheme in Germany brought the project to a standstill, and in 1900 Parliament refused the grant of £5,000 required to complete the survey of the track from Dar-es-Salaam to Morogoro. In 1904 a concession was made to the Deutsche Bank for constructing a single line track over this section, 209 kilometres in length, and on February 9th, 1905, Prince Adalbert of Prussia turned the first sod in Dar-es-Salaam. In December, 1907, the line to Morogoro was opened for traffic.

Meanwhile, in 1906, Freiherr v. Rechenberg was made Governor of the Protectorate, and he immediately recognised that a new policy in the administration of the country must be adopted. Rechenberg and Dernburg realised that the Morogoro Railway was useless unless it could be ultimately extended to Lake Tanganyika, and they set to work to give effect to their ideas. In 1908 a plan for the extension of the railway to Tabora was laid before the Imperial

Parliament, and the work of construction was begun in the same year. The East African Railway Company, which had taken over the completion and working of the Dar-es-Salaam-Morogoro section for the right of acquiring 2,000 hectares of land for every kilometre of line laid, entered into a contract to execute and manage the new track. A Government loan was made to supply the necessary capital, after the State had secured the greater part of the issued stock and a corresponding influence in the enterprise. In 1912, two years before the State stipulated in the contract, the railway was opened to Tabora (848 kilometres from Dar-es-Salaam), and a proposal for its final extension to the lake was approved by the Government.

The new era for Dar-es-Salaam began with the commencement of this line, which now conveys the traveller from the port to Lake Tanganyika in fifty-two hours; but if the trade of the town has not increased as rapidly as might have been expected from its railway connection with the interior, it is explained by the fact that certain regions of this hinterland are so sterile as to be devoid of all economic products. Beyond the first principal station, Morogoro (225 kilometres), which is in itself a prospering settlement at the foot of the Uluguru Mountains, the sterile and waterless steppes begin, and continue to Tabora, at one time centre of the slave trade, and situate about 1,000 kilometres from the coast. Fruitful and productive lands begin here again, but the economic value of the railway can

never be dependent on these regions, but rather on its own terminus on Lake Tanganyika. This long, narrow body of water is in the nature of a second coast line for the colony, and assures the railway the traffic between the Indian Ocean and the regions surrounding the lake and beyond. Until the railway had reached Tabora the caravan transport of the surrounding country had been directed to Lake Victoria, to the greater profit of the Uganda Railway. But now it is gradually returning to Tabora, and the Tanganyika Railway depends at present on native cultivation and negro products. It is by no means certain whether European plantations will ever be extensively established in this region. The middle section of the line will only then be a paying concern when one or more branch lines will have been constructed towards the south, to the fertile Uhehe plateau, and the equally fertile Nassa plateau.

ECONOMIC PROSPECTS OF THE TANGANYIKA LINE.

Mr. Rudolf Wagner, in an article on the subject written in November, 1913, says: "Within recent years a lot has been written and spoken about the Tanganyika Railway as a section of the great trans-African system from east to west. It seems that the significance of the line has been exaggerated. It is true that the German railway constitutes the most rapid means of communication between the eastern Congo and the sea, but this is only important as regards the furthering of mails and passengers. Mails and passengers alone do not, however, make a

railway a paying concern. As regards traffic, the Suez Canal dues are against the eastern route to the sea ; on the other hand, it must be admitted that the western route entails the cost of frequent transshipping. It is impossible to say at the present moment which of the three competing lines—the Belgian to the west, the German to the east, or the British to the south—will acquire the greater part of the trade. That there will be a terrible rate-war is practically certain. At all events, the three lines will do well not to build up too many hopes of being able to exploit lands beyond that traversed by their respective rails, and they will also do well to force the economic development within their own sphere.

“ It is not intended in the above paragraphs to condemn the Tanganyika Railway. The construction of this railway was, both from political and economic motives, necessary, and had to be realised sooner or later. But, unless present conditions deceive, a lengthy period of development will be requisite before the line pays its way. It would be folly to speak of direct profits in the immediate future, and it will even take time before indirect profits are noticeable, because the regions traversed by the rails are still in a practically virgin state, and years will elapse before they can be regarded as important producers and consumers. To judge the Tanganyika Railway by Dar-es-Salaam's present trade were ridiculous, for the very simple reason that the trade statistics are influenced by the imports of railway material. It would also be superfluous to do so, because, come

what may, there can be no doubt that in the distant future Dar-es-Salaam will be one of Africa's most important harbours, and the Tanganyika Railway one of its most important thoroughfares."

A correspondent of the *Times*, writing under date, Zanzibar, February 3rd, 1914, on the subject of the Tanganyika Railway and its probable effect on the economic development of East Central Africa, says : "The construction of the Central Railway, as a section of the great trans-African system from east to west, was necessary from both political and economic motives. By linking up the east coast with the Central African lake system the Germans have entered into competition with the British lines from the south and east and with the Belgian transit route from the west. The aim of the Belgians to attract the trade of the Eastern Congo to the west coast has been frustrated ; the combined rail and river service which they have built up will serve rather as a feeder than as a rival to the German line, for the latter possesses a rapidity and security of transit with which the former, owing to its numerous transshipments from train to steamer and from steamer to train, cannot compete. It is practically certain that the coast port for Urua, which may eventually be Lobito Bay, will for the present be Dar-es-Salaam, and not Matadi.

"On the other hand, it is evident that the British lines from the south will be unaffected, and that Beira will retain the export of the Katanga copper mines until the Benguela Railway reaches Ruwe,

while pending the construction of the Tabora-Muansa branch, the Uganda Railway will preserve its monopoly of transit from Lake Victoria to the east coast. Much will necessarily depend on tariffs, but there are indications that the rival lines will come to terms and avoid a tariff war. The Germans, then, would appear to hold the field for rapidity and security of transit, and when once their projected service of express trains between the coast and the lake is established, considerable returns may be anticipated from mail and passenger traffic. This traffic alone, however, is insufficient to make a railway a paying concern. In estimating the future of the Central Railway it must be borne in mind that the region it traverses is practically undeveloped, that the east coast route is handicapped by the Suez Canal dues, and that the trade of Lake Tanganyika will take many years to organise, owing to the fact that its population has been decimated by sleeping sickness. Consequently, it may be anticipated that a long period of development will be necessary before it yields any appreciable profits."

LAKE TANGANYIKA.

LAKE Tanganyika, the largest freshwater lake in the world, lies some 2,600 feet above the sea. It is 400 miles in length, from thirty to forty-five miles broad, and has an area of about 12,700 square miles. Burton, who visited the lake with Speke in 1858, described it as a vast body of water without an outlet, but in 1874 Cameron discovered the Lukuga, on the western coast line, to be an outlet, and thus proved that the lake was the head-waters of the Congo. In 1876 Stanley confirmed this discovery, and Hore, in 1879, declared the Lukuga to be a perfect outgoing torrent. Further examination by Thomson in the same year led to the conclusion, which has since been accepted, "that the outflow is intermittent, ceasing almost entirely after a period of scanty rainfall, and becoming again established when the lake level has been raised by a series of rainy years."

Lake Tanganyika has not been systematically sounded, but there is little doubt that it is generally very deep. Dr. Livingstone obtained a depth of 326 fathoms near Ujiji in 1871, and Victor Giraud at a later date reported 350 fathoms off Mrambi, on the west coast. The following soundings made by a German officer in July last opposite the places named tend to indicate that the variations in depth are very considerable: Kigoma, 700 fathoms, without finding bottom; Albertville, 260 fathoms; Tembwe, 440 fathoms; Vua, 350 fathoms.

During the rains the lake is frequently subject to storms, which leave a heavy and sometimes dangerous swell, and in the dry season it forms a perfect wind-trap. The wind has frequently been known to change direction as many as eight times in the day, rendering navigation a difficult task. The Zanzibar correspondent of the *Times* says that animal life on the open lake is rarely visible, for the surface of its waters is generally too troubled to prove attractive. The openings of the rivers on its banks, however, are more sheltered, and the estuaries and backwaters teem with birds of every description. Conspicuous among these are white gulls, pelicans, white and grey kingfishers, curlew, cranes, plovers, egrets, coots, fish-hawks, to mention only a few of the varied species attracted to this delightful centre. Lazy, lounging hippos rise and snort from time to time, crocodiles glide softly but swiftly into the water, and fish rise continually, serving to remind the intruder that the water is as full of life as the air.

The lake would seem to have possessed for early explorers a singular fascination, and travellers have been unanimous in their verdict on its beauty and the scenery of its shores. "It reminded me," says Burton, "of the loveliest glimpses of the Mediterranean; there were the same 'laughing tides,' pellucid sheets of dark blue water, borrowing their tints from the vinous shores beyond; the same purple light of youth upon the cheek of the earlier evening, the same bright sunsets, with their radiant vistas of crimson and gold, opening like the portals

of a world beyond the skies ; the same short-lived grace and loveliness of the twilight ; and, as night closed over the earth, the same cool flood of transparent moonbeam, pouring on the tufty heights and bathing their sides with the whiteness of virgin snow."

Commander Cameron and Stanley have left on record a similar impression. "An immense broad sheet," is the latter's description, "a burnished bed of silver—lucid canopy of blue above—lofty mountains are its valances, palm forests form its fringes" ; while Commander Cameron says : "The beauty of the scenery along the shores of the lake requires to be seen to be believed. The vivid greens of various shades among the foliage of the trees, the bright red sandstone cliffs and blue water formed a combination of colour seeming gaudy in description, but which was in reality harmonious in the extreme."

THE USAMBARA LINE.

THE great rivalry between Dar-es-Salaam and Tanga, the coastal termini of the rival railways, concerns the superiority of their respective harbours. Dar-es-Salaam can boast preponderance of tonnage of trade, thanks to the recent importation of material for railway construction, but the fully-developed plantation regions and prosperous European settlements of Usambara places Tanga first on the list as regards exports. Tanga's harbour is certainly the most important natural harbour in the colony. Surrounded by green palms, the town is picturesquely situate at the foot of the Usambara Mountains. Broad, shady streets, stately stores, hotels, and residential houses are its ornaments, the European houses being located in verdant gardens. Cleanliness and order are the town's salient characteristics. Even the native quarters, as an antithesis to most African towns, are cleanly and orderly, and the streets broad, well-kept, and lined with shady palms and mango trees.

On leaving Tanga the Usambara Railway travelling west as far as Korogwe has to the north the fertile district of Wilhelmstal. A narrow-gauge branch line leaves the main track at Tengen, and climbs north through the forest region to the Sigi River. Primarily intended for lumber transport only, the Sigi Railway has grown to be an important

economic factor in the plantation life of East Usambara, and a useful feeder to the Usambara Railway. Other small lines, northwards from the main line, are being planned in East Usambara—a proof that the thorough opening up of the district is progressing favourably.

From Korogwe, the centre of the plantation regions, where the fruitful Pangani Valley opens up to the west, the Usambara Railway turns to the north-west, leaving the northern slopes of the Mafiberg to the south. At Makuyani a twenty kilometre narrow-gauge plantation-train runs to Ambangulu. The scenery becomes wilder and more romantic as West Usambara is reached, with, in the distance, the crowned heads of Kwamonga, Mogamba, and Shangai, three of Kilimanjaro's most beautiful offshoots. Bare crags and wonderful perpendicular precipices alternate with thickly wooded hills and verdant valleys. To the south of the Shangai lies the Schumme Forest, a densely wooded plateau towering up above the Usambara Railway. This forest is one of the sights of West Usambara, and one of its most valuable assets. To link up the plateau by rail with the Usambara Railway would have been a costly, if not a sheer impossible task, owing to the precipitous nature of the 1,000 metre drop from the plateau to the valley beneath. But something had to be done, and a marvellous ropeway, over five miles in length, and one of the most stupendous and

magnificent works of its kind in the whole world, was constructed.

MOUNT KILIMANJARO.

But the chief attraction on the Usambara Railway for tourists is the facility it offers for ascending from New Mishi to great Kilimanjaro, the highest mountain in German East Africa, and one of the few snow-covered peaks in Africa. The altitude of the highest peak (Kibo, or western peak) is about 6,000 metres ; the eastern, or Mawensi peak, is about 5,300 metres high. A few years ago only a bunch of the hardest climbers could boast having explored the glacier regions of German East Africa ; to-day any tourist can climb the Kilimanjaro at his ease—he can even reach the craters of the two peaks on the back of a donkey. In Mishi, at the foot of the mountain, a hotel awaits the traveller ; in Maragu, on Bismarck's Hill, and at an altitude of 4,000 metres, are houses where he can rest. Both on the Kibo and Mawendi are signposts indicating the way ; the construction of club huts and the improvement of the paths is being steadily furthered.

According to Government estimates the Usambara Railway alone will tap forests of a surface measure of 125,000 hectares, an area that will be more than doubled as soon as feeders have been constructed. The most important timber localities so far are the Sigi River in east and the Schumme Forest in West Usambara ; but between these two extremes are miles upon miles of virgin forests trailing in a

north-westerly direction towards the giant Kilimanjaro.

USAMBARA'S ECONOMIC PROSPERITY.

Most of the wood is ornamental. In the Schumme Forest are huge cedars rising to a height of from 130 to 150 feet, of a soft, lustrous hue, that find a ready market in Europe. Mahogany and teak have been found in unimportant quantities, but of such excellent quality that they are being extensively planted and should eventually prove a valuable asset. But the more important woods of Usambara have names little known to the general public, though highly appreciated by coachbuilders, decorators, and workers in ornamental wood. Foremost among these is Mkweo wood, similar to American walnut and amenable to a high polish. This is extensively used by German coachbuilders in the decoration of first-class railway carriages. Mkenene and Mareka, the former yellowish with a pronounced odour of camphor, the latter a beautifully marked heavy wood, are also placed successfully on the market. From the Sigi mills are exported Mwule, Matamba, and Kenge wood. The first-named resembles teak, and fetches a good price in Hamburg; the second is largely used by cabinet-makers, and the third is an oak variety. A peculiarity of the Sigi woods is that, in spite of being hard and firm, they are light and easily worked.

The planters of Usambara made many experiments before they discovered the crops which could

be most successfully cultivated in this fertile region. They failed with tobacco, and their partial success with coffee was arrested by the market slump. Quinine was next tried, but insect pests rendered its cultivation more than difficult, and although acacia gave better results the planted area has not increased. Attention was then given to rubber and sisal, both of which have flourished exceedingly, while secondary crops, such as rice, sugar and cocoa-nuts, have been cultivated with gratifying results. To sum up the situation in the Tanga hinterland, in the words of a German author, we may say that "Usambara's economic prosperity, greater than that of any other district in German East Africa at the present time, depends on her woodlands and plantations, the latter producing, in the first place, sisal hemp; in the second, rubber and possibly cotton, and as secondary crops cocoa-nuts, coffee, tobacco, acacia, sugar, and rice. As time goes on these crops will be added to, and the prosperity of the region will increase, for East and West Usambara have been tried and have not been found wanting. In other words, the outlook is roseate, and German East Africa can pride itself on the measure of progress that has characterised Usambara in the past decade."

LAKE VICTORIA NYANZA.

That part of Lake Victoria Nyanza which has its coastline in German East Africa has a small white population—300 all told according to the latest

census—in the Muansa and Bukoba districts, but it is densely peopled by natives in Ruanda and Urundi. The imports into the region amounted in 1911 to £250,000, and of the exports which totalled £265,000, one half represented the trade in skins and hides, £50,000 was gold from the Kirona Company's mines, and £25,000 was coffee from Muansa and Bukoba. Ground-nuts, beeswax, cotton, rubber, dairy produce, and rice are other increasing exports, but the principal trade is in skins and hides. According to recent estimates there are about one million head of cattle in Muansa, Bukoba, Urundi, and Ruanda, to which must be added considerable quantities of sheep and goats. Cowhides are exported to the value of about £120,000 per annum, which is more than half of the total exports of hides.

The herds of cattle, unless affected by disease, will increase rapidly in numbers. Complaints of the unsatisfactory preparation of the skins are, however, numerous. The natives clean them badly, let them lie around, and thereby spoil them. In order to avoid this, an important European firm of skin and hide dealers has been urged by the Government to open a factory in one of the principal skin markets in Usukuma, with a view to buy and prepare hides on the spot. The principal importer of cowhides from the German sphere of Lake Victoria is Germany, whereas most of the goatskins go to the United States.

The economic situation of the Lake Victoria region has recently been greatly improved by the establish-

ment under Government auspices of certain determined market places on the southern shore of Speke Bay, which has resulted in these becoming important trading centres. They are Kayense, in Usukuma ; Janguze, in Ssima ; Jasikungu, in Magu ; and Urima, in Nassa. Kayense has grown rapidly since 1910 ; eleven Indian and Arab firms have been established and do a trade in cotton and other manufactured goods, which are acquired by the natives in exchange for their produce, consisting chiefly of rice, ground-nuts, skins, and butter. It is impossible to calculate the number of Suaheli dealers who trade either independently or for other firms. Communication with Muansa, the capital of the district, is maintained either overland or by means of dhows on the lake.



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TANGA, GERMAN EAST AFRICA.



NATIVE STREET IN TANGA, GERMAN EAST AFRICA.



ON THE SHORE AT LINDI, THE MOST IMPORTANT HARBOUR ON THE SOUTHERN COAST OF GERMAN EAST AFRICA.



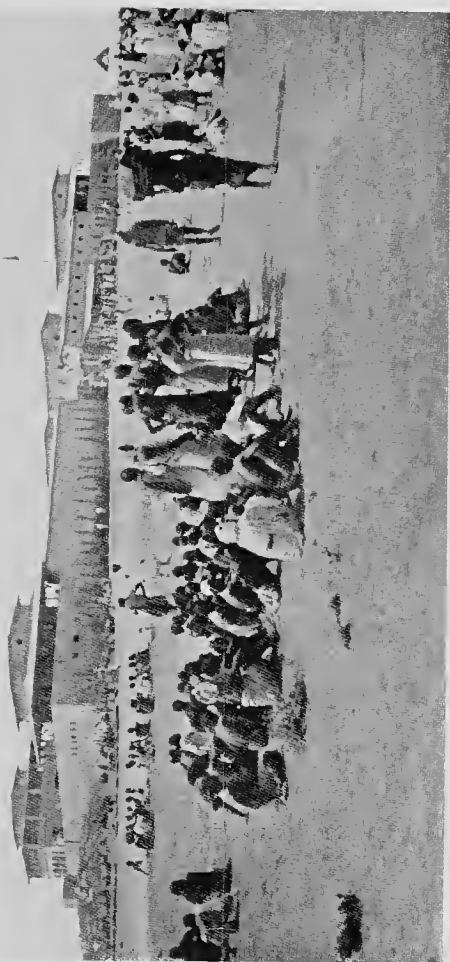
DAR-ES-SALAAM, GERMAN EAST AFRICA.

MIKINDANI, GERMAN EAST AFRICA.





THE NILE HERE BEGINS ITS 4,000 MILE JOURNEY
FROM VICTORIA NYANZA TO THE SEA.



ADMINISTRATION OFFICES, AT TABORA, GERMAN EAST AFRICA.



VIEW OF THE ULUGURU MOUNTAINS, GERMAN EAST AFRICA.

TOGOLAND

GERMAN ACQUISITION AND EARLY DEVELOPMENT.

ALTHOUGH the smallest of the territories which formed the German Colonial Empire in Africa, Togoland, with its area of 33,660 square miles, and its population estimated in 1913 at 1,030,000, was officially regarded as a model colony since it had been for many years financially independent of the Fatherland. In the thirty years that the country has been under German administration, a stable government has been established, the hinterland has been opened up, three railways and many excellent roads have been built, slavery has been abolished and inter-tribal warfare discouraged, and a number of experimental plantations have been formed. The Government, by its energetic policy, have developed the resources of the country, established trade and commerce on sound lines, and made considerable progress towards the betterment and prosperity of the people. The whole country has been described as a great storehouse, actual and potential, for the supply of the most varied tropical products—including palm kernels and palm oil, cotton, cocoa, maize, groundnuts, cassada, coffee, rice, and rubber—but its present prosperity is only

a small indication of the rewards which an enterprising and more sympathetic administration may expect to secure from its future development. Yet this compact little colony, wedged in between Dahomey on the east and the Gold Coast Colony on the west, was for many years the only unannexed region on the West African coast, partly one supposes on account of the difficulty of effecting a landing on the thirty-two miles of palm-fringed, surf-beaten sands which form its sea-border.

At any time during the last four and a half centuries Togoland might have been annexed by Portugal, France or England, but it was not until Germany set about her policy of colonial expansion that this strip of country was considered worthy of notice. As far back as 1471, the Portuguese had reached Upper Guinea, ten years later they built Fort Elmina, and in 1517 they had established a regular slave trade on the Gold Coast. When, in 1624, the Dutch elbowed the Portuguese out of this region, they had, as neighbours, the English and the Danes. To the west of Togo, on the Point of Three Capes, Brandenburg constructed several forts between 1683 and 1707, while on the territory to the east, the first factories were instituted by the French, the English and the Dutch. The suppression of the slave trade in the Dutch territory in 1803, and in the English area four years later, caused these colonies to decline in importance, and between 1850 and 1871 both the Danes and the Dutch sold their possessions to the English. The French, in



the meantime, had acquired Kotonu (1864) and Port Novo (1882), in Eastern Upper Guinea, but the natives of the inhospitable coast of Togoland remained in undisputed possession of their territory.

TRADE PRECEDES THE FLAG.

About this period some German merchants, with a view to avoiding the high import duties on the English Gold Coast, obtained a concession from the local chief, and founded factories in Anecho or Little Popo. From the death of the chief in 1883 until 1884, the disputes over the succession kept the country in a ferment. In July, of the latter year, Dr. Nachtigal, the German Consul General for West Africa, restored order by entering Little Popo and hoisting the German flag in Bagida and Lome. In 1886 a defensive treaty was concluded between the German Imperial Commissioner Falkenthal and the paramount chief, the German standard was unfurled in Agome-Palimo in 1887, and in 1888 Falkenthal made his successful march to Salaga, which was followed by the Anglo-German treaty declaring the neutrality of Goneja and Dagomba.

The German occupation of the Togo coast was followed by the exploration of the hinterland. The large village of Adangbe was reached in 1886, the district of Agotime was visited in 1887; the north-west and north-east regions were traversed, and the station of Bismarckburg was founded in Adeleland in 1888. In 1890 Misahohe was established as the

only pass over the Togo Mountain, and in 1894 Bismarckburg was abandoned and the station was removed to Kete Kratschi on the Volta River.

The natives, in the course of these expeditions, having been "taught a sharp lesson" in order to prepare them to accept the German occupation in a properly submissive spirit, and the boundary lines between German and French and German and British territories having been settled by the agreements of 1897 and 1899, the military force was reduced in 1900 from eleven Germans and 250 natives to seven Germans and 150 natives, and development work was speeded up. The chief post-office was established at Anecho (Little Popo), and before 1900 Lome and Anecho had been connected by telegraph, not only with each other, but also with the Gold Coast on the west and Dahomey on the east. Togoland was thus provided with two cables to Europe.

By 1909 postal facilities had extended to six stations; by 1911 the present facilities of thirteen chief offices with four sub-stations had been attained. There is, besides, a convenient telephone system, much appreciated by the native community. The fee ranges from "sixpence to two shillings per three minutes, according to distance. Every firm, hotel, plantation, and missionary bureau is fitted with the telephone, and the organisation of the service is perfect." With the beginning of 1913, steps were taken to erect a powerful wireless station at Kamina. Road construction was proceeded with so steadily

that by 1914 there were 755 miles of roads suitable for motor traffic, and rest-houses were established. These rest-houses, under the German administration, were generally large, comfortable and invariably clean. Only white people were allowed to occupy them, and the duty of keeping them clean devolved upon the chiefs of the neighbouring villages. In the vicinity of the rest-houses were compounds for the accommodation of native travellers. These compounds frequently formed a considerable village, consisting of fifty or sixty round huts, each sufficiently commodious to shelter a native family. The native official responsible for the hygienic condition of the compound saw to it that the native occupants of the huts swept and garnished their temporary lodgings before resuming their journeys, and collected the penny per diem which was the charge for the accommodation.

The twenty-six miles of railway from Lome to Anecho was completed in 1905 ; the section Lome to Palime, close to Misahöhe, in West Togoland, was opened in its whole length of about sixty miles in January, 1907 ; and there is now a railway from Lome due north to Atakpame, 110 miles, thus giving a total length of about 200 miles of railway for the colony.

GREAT AND LITTLE POPO.

At the time of the coming of the Germans in 1884, the most important settlements were two places, called respectively, Great and Little Popo,

and the term Popo—being the Portuguese word *povo*, a people—was applied to the entire district. Great Popo exported from 160,000 to 170,000 gallons of palm oil in good years, and some 3,000 tons of palm kernels. The importation of European goods are given at about 850,000 marks for Great Popo and 130,000 for Little Popo, the striking difference in the figures being accounted for by the fact that business at Little Popo was largely transacted in cash, that at Great Popo being by barter. The export of Little Popo was greater than that of its neighbour in palm oil, but in palm kernels much the same, the figures being approximately 250,000 gallons for the one and 2,500 tons for the other.

Great Popo, with a population of about 3,000, finally passed to French Dahomey. It was undoubtedly a loss to Germany. Travellers describe this section of the lagoon as unusually beautiful, the numerous islands luxuriantly covered with stately palms alternately with magnificent stretches of clear blue water, constituting a panorama of extraordinarily superb magnificence. Little Popo, with less natural beauty, undoubtedly possessed a native community more in harmony with European ideals. Money currency obtained to a considerable extent; but native supplies were still brought exclusively by women. Transactions were for quantities rather than small lots. The Germans had three factories, the French two; there were also three Sierra Leone businesses and several native concerns.

The white population consisted of four Frenchmen

and five Germans, and their method of life is thus described in the *Afrika Hand-Lexikon*: "The management of the factories is mostly in the hands of Europeans, strong men of 20-25 years of age, sent out from Hamburg or Bremen under a three years' agreement. As assistants they have 'Native Clerks'—good penmen, but inaccurate accountants and not too trustworthy. Usually four clerks are employed in one factory. One acts as salesman, another as warehouseman, and the two others as buyers, chiefly employed in measuring the palm oil and kernels brought in. The factories are open from 6 in the morning to 6 at night—being closed at midday from 12 to 2. In Lome and Bagida trade is carried on in English; at Porto Seguro in Portuguese. German is quite unknown to the natives."

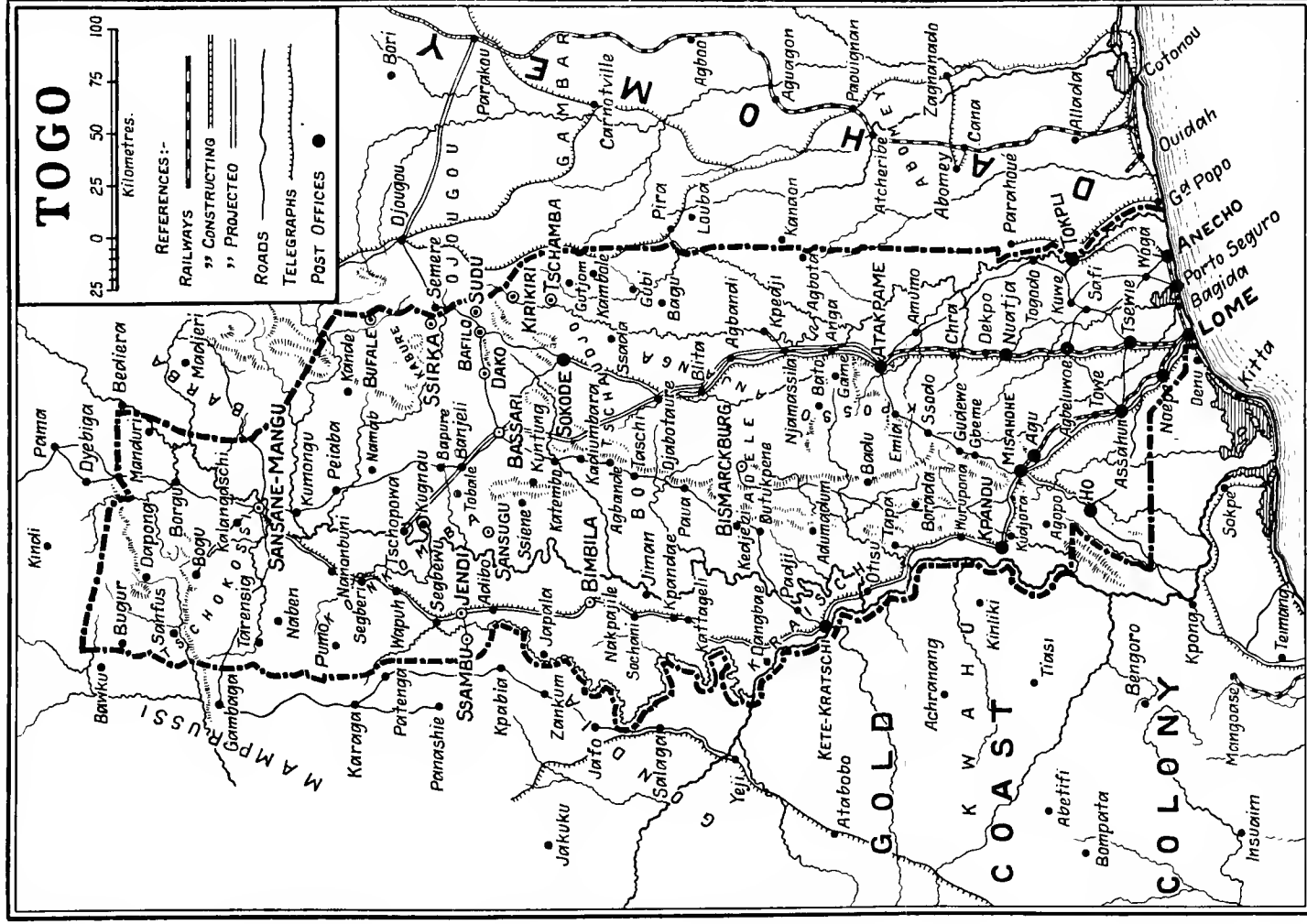
PHYSICAL FEATURES.

THE three hundred mile wedge of Togo territory which runs south to north from the shore of the Gulf of Guinea to the borders of the French Soudan, may be roughly divided into three parts by imaginary lines drawn from east to west, and these divisions may be catalogued under the headings—civilised, semi-civilised and savage. South of rail-head, at Atakpame, some 120 miles from the coast, the natives are amongst the most civilised of the African negroes. They are accustomed to clothing, are comparatively industrious, and employ coined money as regular currency. The various tribes dwell on friendly terms among themselves and with the European settlers. This division of the colony contains three lines of railways and many excellent roads. North of Atakpame, about 100 miles to the Government station just beyond Sokode, is a belt of semi-civilised country, traversed the whole distance by a good government road with rest-houses at more or less regular intervals of fifteen miles. In this division the natives are either adorned with warlike habilaments, or they go naked; they invariably carry arms, and inter-tribal frays are not unknown. Here the currency is mixed, coined money taking its place with cowries, salt, and brass rods. North of Sokode the country is inhabited by savage, hostile

RAILWAYS

PROJECTED

TELEGRAPHS



tribes, who have not been brought under the influence of German *kultur*. A District Commissioner, with headquarters at Mangu, on the banks of the Oti, the principal river of Northern Togo, was nominally in control of this region, but as he recently had to defend his station against a fierce native attack, in which each side suffered heavy casualties, it is evident that his authority was strictly nominal. No made roads go north of Mangu, and the flat, barren country, which is largely inundated in the rainy season, owing to the overflow of the Oti River, is practically unexplored. The wild and warlike tribe, the Tschandjo, who swept down from the north a hundred years ago—the first mounted warriors ever seen in Togoland, settled in the south-central region, and it was in the neighbourhood of Sokodo that they gave check to Dr. Kersting and his band of free-lance adventurers. Kersting, recognising the fine fighting qualities of the Tschandjos, made an alliance with their uro, or king, and, with the assistance of his braves, eventually brought the whole territory under German rule.

MOUNTAINS AND RIVERS.

The irregular coastal line of Togoland consists of a lagoon sand bank of sea sand, a few metres high and some hundred metres wide. This is succeeded by an undulation of clayey soil, which in some parts is filled with swamps and in others with lagoons and streams. The lagoon zone between the sand bank

and the red clay plateau begins at Lome. Further inland is a zone of heavy, clayey soil, partly covered with grass, brushwood and occasional palm groves. This plateau, which is seventy to 120 km. wide, rises gradually in terraces to a height of from 200 to 400 m., and is bounded by the steep Togo Mountain. Togo Mountain runs through the whole colony, with the "island" mountains on either side. The chief mountain in this central chain is called Fetisch Mountain, and has a different geological formation from either the westerly or Buem range, or the easterly or Agu range. Fetisch Mountain, which extends from the Volta to the source district of the Mo in the north, is an endless mountain range. The Agu range begins east of the River Volta, and between this range and the Fetisch chain are broad plains.

All the rivers in the colony—the Volta, with its tributaries the Oti and Kulupkene, the Monu, the Haho, the Sohio, and the Todschie—rise in the central range. The Volta is only navigable for a short distance in Togoland, but the Monu, from Togodo onwards for a distance of about 150 km., is a very valuable waterway. Almost all these rivers are interrupted in their middle courses by rapids. The Kulupkene and the Volta form the boundary between German and English territory, and the former, with its abrupt, sinuous windings, is only navigable for small vessels. The Oti, the principal stream of the eastern Salaga lowland, rises as the Pendjari in the Alakora Mountains in

Dahomey, but it enters Togoland below $10^{\circ}55$ N. lat., and is henceforth known as the Oti. It has a breadth of from eighty to 100 m., and overflows its boundaries for several hundred metres in the low-lying country on either side. The Mo, the source of which is the Kurongo Mountains, penetrates the Tabalo Mountain land, and has a breadth of about forty m., and a depth of $1\frac{1}{2}$ m. It receives the Katscha and empties itself in the Oti. The most important coast rivers are the Sohio and the Haho. Both rise from numerous springs in the Akpasso plateau; both flow through the mountain region of the Agu range and eventually find their way into the great Togo lagoon. The less important rivers and brooks are affected by the rainy and dry seasons, and many which are swollen, are impassable after the rains, have no place in the colony's waterways during the greater part of the year.

GEOLOGICAL FORMATION.

The geological formation in the east of the colony, where the River Monu forms the boundary with French Dahomey, consists of gneiss and granite, and the gneiss and granite of the Monu plains, which run north and south along the entire length of the border, are pierced with a few outcropping hills of hornblende, which have resisted all action of the weather. Further to the west, and over the greater part of the colony, is to be found schist and sandstone

formations, with considerable quantities of quartzite on the extreme western border. This quartzite is a continuation of the ridge which begins north of Accra, in the Gold Coast, and consists of a number of parallel ranges between which stretch small isolated plains, and attains in some places a height of 3,280 feet above sea level.

Being continuous with the gold-bearing hills of the Gold Coast, this mountain range in West Togoland might reasonably be supposed to yield gold; but such has not proved to be the case. Very similar samples of rock have been obtained to that found north of Accra, but so far they differ from the Gold Coast samples in the one essential of not containing gold. Repeated attempts to find gold-bearing quartz in Togoland, extending over about fifteen years, have not proved successful. But gold in small, if not paying, quantities has been found near the western frontier. Certain parts of the interior have been examined with but little result. As already stated, there is a great deal of iron in certain parts of the interior. The best known deposits are at Banjali, near Bassari, in the Sokode district, which is considered by experts to be the best part of Togoland. The deposits here are very important, and the ore is good; but the industry cannot be profitably exploited except by extending the railway from Atakpame and improving the harbour accommodation at Lome. The iron is much used by the natives, who forge from it various tools, swords, &c., and make

crude agricultural implements. In 1911 the natives obtained 400 tons of iron ore, which was valued at £3,600. It is probable that valuable minerals exist in Togo, but not one quarter of the country has as yet been geologically surveyed.

The occurrence of one solitary patch of chalk on the Monu River, at Tokpli, about thirty miles from the coast, is a fact of great interest to geologists, and one which may also be of considerable value for the production of lime, often difficult to obtain in Africa except from coral rag or more rarely volcanic lava.

The prevalence of sandstone over a considerable part of the colony has permitted the erection of stone buildings. The Governor's residence at Lome is built of stone; and more recently stone buildings were being put up at Kamina in connection with the wireless station.

FORESTRY.

The subject of forestry was carefully studied by the authorities in Togoland, who had enjoyed exceptional facilities for obtaining practical knowledge of the subject in Germany; and Herr Metzger's monograph, compiled after four years' work in the colony as Forestry Superintendent, is a comprehensive and valuable document. Metzger estimates that about $1\frac{1}{2}$ per cent. of the area of Togoland is virgin forest, "and certainly not more than 2 per cent." Calculating the population at one and a half million, and allowing two hectares to each native for cultivation, with share of house room and roads, he arrives

at the fact that 30,000 sq. kilometres of land are in use, to which he adds another 3,000 sq. kilometres as under oil-palm cultivation. This is apparently 38 per cent. of the total area of the colony. Allowing 2 per cent. for virgin forest, it follows that 60 per cent. of the land must be unused, all high lying and covered for the most part with knotted or gnarled trees, such as may be seen in an old orchard—in fact, savannah. Metzger describes how all this savannah results from the wasteful native process of clearing the forest for the purpose of cultivation (as explained elsewhere), and contends that if the native cannot be induced to adopt more economic methods, the virgin forest which is left is in imminent danger of complete destruction, a loss which would be disastrous to the community. Valuable timber would be lost, whilst the resulting effect on the climate would not be for the better. As an instance, he cites Misahöhe; there, under the protection of virgin forest, the harmattan is so modified and tempered as to be little felt, with a consequent gain in comfort and health. Very different is the state of things at, say, Nuatye, on the same latitude, but quite unprotected by forest.

From some notes published in 1912 by Mr. Unwin, Conservator of Forest, Southern Nigeria, we learn that the soil at the coast, being sandy with an admixture of iron, is not favourable to forest trees and hinders their growth. Many experimental avenues of teak and mahogany in this region, more

especially at Lome, have proved to be only a partial success.

At Atakpame, ninety-five miles inland from Lome, no less than 25,400 teak seedlings have been planted since 1901, and these are doing well. Similarly, all other inland districts where afforestation has been tried—as, for instance, the large area Haha-Buloe—have given good results. Teak trees are found growing on almost every kind of soil and formation, both where the soil has good depth, as at Pfandu, or at Yendi, where it is very shallow. Teak thrives everywhere, except for small patches at Atakpame in a swamp, and small areas at Basari on very poor sandy soil over an ironstone pan.

Mahogany is indigenous to certain forest localities inland: but it is more exacting in the matter of soil than teak. The best mahogany trees were growing at Sokode and Yendi on a rather light, well-drained soil. The Senegal variety, for instance, *Khaya senegalensis*, when planted in Togoland, shows itself most susceptible to stagnant water and bad drainage.

WILD ANIMALS.

Elephants may still be encountered in the desolate steppes as well as in the primeval forests of central Togo, but their number is rapidly decreasing, and the export of ivory has become of quite subordinate importance. Buffaloes and various species of antelopes also inhabit the steppes, and crocodiles are found in the larger rivers and the lagoons. Leopards and hyænas infest the whole of the country,

and apes are numerous, but the lion is only to be met with in North Togo.

A LAND OF NATIVE CULTIVATION.

Togoland, with the exception of a few Europeans in the trading stations, is essentially the land of the natives and of native cultivation, and the people certainly display both knowledge and energy in agricultural pursuits. But like most negro races, their methods are wasteful and destructive. The native system of agriculture throughout the country, and Africa generally, is to uproot or burn trees and bushes and to turn this "cleared" land into temporary plantations. As, in the course of a few years, the soil of these plantations becomes exhausted, they move to another area and repeat their clearing process. In this manner millions of square miles of primeval forest have been destroyed in the course of centuries, and stunted trees and bushes have replaced the great tropical growths. It is supposed that the climate of West Africa was at one time damper than now, and that the forests that sprung up in the destroyed regions were retarded in growth by lack of water.

There are many fertile areas in Togoland similar to those in German East Africa, where cultivation could be carried on by European methods and modern machinery, but the soil generally is mostly poor and only adaptable for native development. The native contrives to obtain good results where the European fails, for the working expenses of the former

are reduced to a minimum, and the negro's whole family, including the women, are employed in the fields. The presence of the dreaded tsetse fly in many parts renders impossible the introduction of draft animals for agricultural purposes. There are, however, certain districts which are free from tsetse, and here the plough could be used when once the negroes had learned how to handle it, and the extent of land under cultivation could be more than doubled. The fact that the country is capable of greater development, and that the soil, at present only sufficiently cultivated to provide for immediate local wants, can be made to yield much richer and more bountiful harvests, is beginning to be realised by the natives. Even the inhabitants in the far interior are taking much more interest in commercial affairs than formerly, while the tribes nearer the coast, and those living in the vicinity of the railway, are becoming more prosperous and better clad. Thanks to the opening up of the colony by railways and roads, the small native traders of the coast are penetrating into the hinterland, and are to be found at all the principal stopping places along the lines. In addition to the native traders, Syrians are now also trading in the interior. These people, who are found everywhere along the littoral, are rapidly becoming serious competitors with the native traders, and they are apparently doing well, as they continue to increase in numbers.

EXPERIMENTAL AGRICULTURE.

Dr. Walter Busse, of the Imperial German

Colonial Office, has told us that wherever, in the German African colonies, "climate, soil and condition of settlement do not admit of plantation culture, and a native population capable of production is present, the Government will, as a matter of course, encourage native agriculture as much as possible, and by this means create an improved economic position." The savannah climate which prevails over Togoland prescribes certain natural rules for plant cultivation in the colony, and sets certain definite limits to plantation culture under European management. As a matter of fact there is no important European planting industry in Togoland, but the land which, for the most part, is thickly settled, possesses an active, intelligent population with an inclination towards agricultural work. The German authorities, as was their custom, deprecated the agricultural methods of the natives, and combated them with "a continuous and well-regulated system of instruction for the natives in order to make production more effective both for local consumption and for export." This work was undertaken by the organisers of the Agricultural Institute, at Nuatjä, and of the three cotton stations of the colony, assisted by a staff of fifteen officers of various grades, five assistants and district agriculturists, and a number of subordinate instructors.

In their endeavour to educate the native to a higher scale of productivity, the Germans established an Agricultural College in Togoland for native students, who, having completed their studies, either

remained as pupil teachers or were sent into the villages to give lectures and practical instruction in farming.

At the beginning of 1911 there were ninety-nine pupils in the college, nineteen of whom returned to their villages during the year. At the end of the year thirteen new pupils joined the college. Special experiments have recently been made with cotton, maize, rice, sweet potatoes (African), beans, ground-nuts, and ground-beans. These include twenty varieties of cotton, nine varieties of maize, four kinds of sweet potatoes, and twenty-three varieties of beans. Some of these experiments were successful, but not all. A certain number of cattle were kept, at the college for breeding, ploughing and other purposes, and an experimental importation of a number of Berkshire hogs is reported to have given satisfaction.

At the end of the course a certain number of pupils are started in the various districts in settlements of their own, and receive practical assistance from the Government. The utility of the course and the good work which is being done is undeniable. At the same time progress is slow and practical results somewhat discouraging. As a matter of fact, the German as an educator of an alien or native race is a failure. He lacks understanding of and sympathy with his pupils, and he fails to make himself understood by them. He demands that they shall learn the German tongue, embrace German methods and show their devotion to German ideals.

The result is that the native, as scholar, tax-payer and devotee, is a profound disappointment to his German mentor, who does not appear to appreciate the fact that he in his turn is an even greater enigma to the native. That the negro distinguishes between Europeans, and has his preferences among them, is not so disturbing to Teuton intelligence as the uniformly evident inclination of the negro to prefer any other European to the German.

THE OIL-PALM CULTIVATION.

THE agricultural development of the colony received a severe set-back in 1911-12, in consequence of the almost unprecedented climatic conditions, and many crops were ruined by the drought—a timely reminder to the new rulers of Togoland that however flourishing the finances and commerce of the colony may be in the future, the revenue may, at any time, be unfavourably influenced by years of drought. Palm oil and kernels, which are found in some places in forests and in others in patches nearly throughout the country, form the principal products, and the Government encouraged their cultivation by the offer of monetary rewards for careful attention to the trees and land. At present there are no means of dealing with the thousands of fruit-bearing trees that exist, and not a tenth of the oil and kernels produced in the country is collected.

The oil-palm in the old days was the glorious heritage of the native, who found a ready sale for such oil as his women-folk were able to extract by a slow and laborious process. It is likely that the native believed that so long as he retained the tree and the fruit, his time-honoured oil business would never be taken from him, but the great and growing demand for oil has beaten him, and he is fast losing the trade because he can no longer make the quantity that the market requires. Palm oil is now requisitioned for a hundred-and-one new uses. It is no

longer the monopoly of the soap-maker or the chandler. Palm oil deodorised by hydrogen is needed for the "nut butters" of the vegetarian; makers of nitro-glycerine explosives derive their glycerine constituents more and more from palm oil; whilst the exploiters of novelties in metal polishes ransack the ship's hold for leakages from the palm-oil cask. Oil must be had in increasing quantity; machinery speeds up the production; yet still the cry is for more oil, until the European himself attempts to become owner of thousands of trees, eagerly and not too scrupulously encroaching on lands that once were considered native, in the vain hope of finding a speedier road to prosperity.

THE PALM TREE AND ITS PRODUCTS.

The profitable carrying on of this industry depends on the demand for palm oil and the use which can be made of the residues. That the supply of palm kernels themselves should decline is unthinkable. The steady increase in their growth in all parts of the West African Coast is conclusive evidence of their almost limitless possibilities. Moreover, the statistics clearly show the extensive nature of the demand. Great Britain and Germany are no longer the only purchasers; South Africa has entered the market, as well as Holland and France, though their lots are comparatively small, and could not in any way effect the profitable exploitation of kernel-crushing on a large scale.

In a paper read before the Royal Colonial Insti-

tute, entitled "The War: British and German Trade in Nigeria," Mr. R. E. Dennett, of the Forest Department, Nigeria, made it abundantly evident that Germany had been farming the commerce of the Protectorates to the detriment of the Britisher. He showed from statistics that Germany's export trade to Nigeria greatly exceeded ours, while of the Nigerian produce which left the country, Germany in 1913 took nearly all the copra, half the cocoa, more than two-thirds of the palm kernels, one-eighth of the palm oil, half the hides, one-third of the mahogany, more than half the ground-nuts, over a third of the shea nuts, and all the palm kernel cake.

On the subject of the palm tree and its products, Mr. Dennett is both interesting and instructive, and in view of its inevitable increase in importance as a British industry, the following extracts from his paper may be usefully reproduced here.

"People who have little or no knowledge of the palm tree (*Elæis guineensis*) confuse the palm fruit with the palm kernel. The palm kernel of commerce is the seed of the palm tree. This is surrounded by a hard shell, and it is then called the palm nut. This shell is in its turn covered by an oily fibrous matter, and is then known as the palm fruit. If we take this fruit and cut it into two parts, we can see these three parts of the fruit more distinctly; first the outer yellow covering or the fibrous pericarp, from which the palm oil of commerce is extracted; then the shell, and finally the kernel, from which the white palm kernel oil is extracted.

"The composition of this fruit is as follows :—

Pericarp Oil	..	..	18	per cent.
Fibre and Moisture	..	..	12	„
Shell and Disk	..	..	58	„
Kernel	..	..	12	„
<hr/>				
Total	..	..	100	„

"The uses of the palm oil tree are various. It yields the palm oil and kernels of commerce. It gives the native a drink he is very fond of, called palm wine, which, when fermented, gives our cooks yeast for bread-making. The shells of the nuts are used by blacksmiths as fuel, as they give off great heat. At the present time there are three methods of making palm oil: (a) from the fresh fruit, (b) from partially fermented fruit, and (c) from well fermented fruit.

THE NATIVE AS CULTIVATOR.

"Bunches of fruit having been severed from the parent tree, are sliced and hammered by natives, using long poles, until the fruit becomes detached from the bunch. The fresh fruit is either prepared at once into what is called soft oil, or allowed to ferment, or partially ferment, and made into hard oil. The procedure followed in making either of these kinds of oil is much the same. The fruit is placed either into canoes or clay troughs, water is poured over them, and then, by treading or beating, the fibrous matter containing the oil is separated from the nuts. The nuts are then taken out and placed in the sun to dry, while the fibrous matter, by further beating or treading, is made to yield the oil which

floats to the surface of the water. This oil is ladled out into pots and boiled, and then allowed to rest, so that all dirt or sediment falls to the bottom of the pot. This clean oil, soft or hard, is the palm oil of commerce. This oil is taken in calabashes or tins to the traders' factory, which, generally speaking, is near to a river or a railway, and there put into casks and sent to the nearest port for shipment to Europe.

"There are, practically speaking, two kinds of palm oil exported from the West Coast, i.e., hard and soft, but soft oil is of two qualities—Lagos and ordinary soft oil. As a rule, Lagos and soft oil is worth £3 to £4 more than hard oil, the reason being that there is about 8 per cent. more glycerine in the soft than in the hard. The percentage of glycerine varies in inverse proportion with the acidity.

"In the olden days one of the chief occupations of slaves was that of cracking palm nuts; now this work is left to boys and women. After the nuts have been dried in the sun, they are heaped up under little sheds to protect them from the rain. In places where rocks are plentiful the nuts are taken there and cracked on them by a stone held in the hand of the cracker. In other places the nuts are put on a block of wood resting on the ground between the cracker's legs and struck with a piece of iron held in the cracker's right hand. In this way one worker will crack from 15 lbs. to 25 lbs. of kernels per day. The kernels are then packed in different kinds of baskets and taken to markets near rivers, where they are bought by native middlemen. Competition is very

keen, and so these middlemen are tempted to adulterate the kernels by adding shells to them or by soaking them in water for two or three days. Finally, they are taken in canoes down rivers or by rail to the European traders and sold by measurement at so much a bushel. . . . Think of it! 241,000 tons of palm kernels shipped to Hamburg in 1913, and nearly every nut containing one kernel is cracked by hand."

THE FUTURE OF PALM OIL AND KERNEL INDUSTRY.

Although the palm kernel industry has not attained important dimensions in Togoland, there is no reason why it should not form one of the staple products of the colony, or why the whole of the trade in palm kernels should not be transferred from Germany to this country. Hitherto the quarter of a million tons of palm kernels—valued at over £4,000,000—exported annually from British West Africa has gone to Germany, where crushing-mills and manufacturing plants have been established, while considerable quantities of high-priced kernel oil, in manufactured or unmanufactured form, have been exported from Germany to Great Britain. About 50 per cent. of the produce of the crushed palm kernels is marketed in the form of oil, and the balance is made up into palm kernel cake, practically the whole of which is consumed in Germany, where it commands a good price and is in great demand, especially among dairy farmers.

This profitable German industry has now been suspended owing to the war, which has rendered it

necessary for planters to find a new market for their produce, and the opportunity seems propitious for an endeavour to establish it in Great Britain upon a substantial scale. With a view to arousing interest in the subject in commercial and agricultural circles, Sir Owen Phillips, K.C.M.G., Chairman of the West African section of the London Chamber of Commerce, has issued a timely pamphlet in which the present position of the trade is described and its potentialities are indicated. The Anglicisation of the industry, in addition to promoting Imperial commercial intercourse, and securing increased industrial employment in the United Kingdom, would furnish British farmers—who are complaining of the enhanced prices of present foods—with a new supply of a relatively cheap and excellent feeding material.

The profitable exploitation of this crushing industry depends upon the capacity of the British market to absorb a larger supply of palm kernel oil and upon the possibility of inducing British farmers to adopt the use of palm kernel cake. There are at present two mills, both at Liverpool, for dealing with palm kernels, capable together of crushing annually about 70,000 tons, leaving a balance unprovided for of at least 180,000 tons. To cope with this additional quantity several of the great milling companies of Liverpool, London, Hull, &c., have already made and are making alterations in their machinery in order to crush palm kernels, so that in the near future much greater quantities will be dealt with. A new mill on the Thames, at Erith, is also being

erected, which, when completed after the war, will be capable of crushing a very large quantity.

PALM KERNEL CAKE FOOD.

In order to ascertain whether British farmers would be prepared to make a larger use of palm kernel cake, Sir Owen Phillipps placed himself in communication with the leading agricultural authorities in all parts of the country—principals of agricultural colleges, experimental stations, &c., and these gentlemen have taken up the matter with the greatest enthusiasm. They are practically unanimous in asserting that the fact of large quantities of palm kernel cake being available at a price comparing favourably with that of other similar foods (now becoming more expensive than formerly) has only to be brought to the notice of farmers to ensure a greatly increased demand ; in fact, that farmers are looking out for a new and comparatively cheap feeding material. Many of the principals and professors of the colleges referred to in various parts of the country have undertaken an elaborate series of comparative experimental feeding tests with palm kernel and other cakes, so as to demonstrate the merits of the former. When these are completed the results will be made widely known to the agricultural community.

In an article published in the *Field* on "Palm Kernel Cake," Mr. F. J. Lloyd, F.I.C., points out that a really good cake, made from this product, is now available in this country. The nutrients in palm kernel cake are quite exceptionally digestible,

and one German authority says that, "owing to its pleasant taste, its great digestibility, and the way in which cattle thrive on it, no cake fetches so high a price." It increases the yield of milk, improves the quality as regards butter fat, and is said to impart a good colour to the butter, so that it is especially valuable for winter feeding. Though mainly used in Germany for dairy cattle, Professor Lloyd adds that it has also been given with satisfactory results to steers, sheep, and pigs.

PALM KERNEL STATISTICS.

The *Bulletin* of the Imperial Institute contains an article calling attention to the magnitude of the trade in palm kernels, and discussing its commercial aspect. The following table shows the quantities and values from each of the chief producing countries in West Africa in 1912 :—

	<i>Quantities.</i>		<i>Values.</i>	
British Possessions :	<i>Tons.</i>	<i>Tons.</i>	£	£
Gambia ..	445		6,518	
Gold Coast ..	14,629		205,365	
Nigeria ..	184,624		2,797,411	
Sierra Leone ..	50,751		793,178	
		250,449		3,802,472
French Possessions :				
Dahomey ..	36,708		535,937	
Gaboon ..	354		4,671	
Guinea ..	5,054		41,079	
Ivory Coast ..	6,692		70,710	
Senegal ..	1,736		28,221	
		50,544		680,618
Belgian Congo ..	—		—	110,835
German Possessions :				
Kamerun ..	15,742		220,300	
Togoland ..	11,456		168,978	
		27,198		389,278
Totals ..		328,191		£4,983,203

This article also gives the average value of the kernels, which in Hamburg ranges from £18 2s. to £19 2s. per ton (June, 1914) ; the value in Liverpool was £17 17s. 6d. to £18 18s. 9d. per ton in July last, and in September was £16 7s. 6d. to £17 10s. per ton.

Palm kernel oil is used for the same purposes as cocoa-nut oil, viz., the manufacture of soap and candles and the preparation of various edible fats, such as margarine, cooking fats, vegetable " butters," and chocolate fats. By suitable treatment it can be separated into a liquid portion (olein) and a hard white fat (palm kernel stearin), and in this way the consistence of the material can be varied for the preparation of different edible products. These edible palm kernel oil products are prepared on a very large scale in Germany and elsewhere, and are largely imported into this country. With palm kernels at £17 to £18 per ton, the value of palm kernel oil in the United Kingdom is from £36 5s. to £36 15s. per ton, with Ceylon cocoa-nut oil at £40 per ton.

It is added that British oil-seed crushers who undertook to work them would find no difficulty in getting a market for the oil among soap-makers and makers of edible fats. Although the article points out that some difficulty might be experienced in finding a market quickly in the United Kingdom for the palm kernel cake, because English farmers do not readily take up feeding stuffs which are new to them, it will be gathered from what has already been said that, thanks to the initiative of Sir Owen Phillipps, this

difficulty is likely to be overcome, and the opportunity is a particularly good one now that other feeding stuffs are becoming more expensive, as that is a point which will have great influence. It is not a new feeding material, but all the evidence points simply to the fact that it has only to become better known and available on a large scale to result in mutual benefits to the farmer, the miller, the manufacturer, and the West African colonies.

OTHER AGRICULTURAL PRODUCE.

NO efforts were spared by the German Government to develop cotton cultivation, and great hopes were entertained by the administration of Togo becoming a great cotton-producing country, but the results have not yet realised expectations. Cotton is indigenous to Togoland, and has been spun by the natives from time out of mind. The old cotton industry of the negroes was ruined by the introduction of calicoes from Europe, and it is now difficult to obtain good native-woven cotton either in Togoland or the Cameroons. The cotton plantations in Lome, Anecho and Atakpame are doing fairly well, but in the Misahohe district the natives naturally are more concerned with palm oil and kernels, for which they obtain better prices with less trouble. In fact, cotton cultivation is only popular where there are less oil and kernel ; and in these areas the Government expect the natives to plant and make large farms for themselves. In the Sokode district in the north, owing to the nature of the soil, cotton has been a failure, and there appears to be little prospect of its succeeding there.

Good results are expected to be obtained from cocoa, which is doing very well indeed in the neighbouring colony of the Gold Coast, whence thousands of pounds' worth are exported to Europe. There seems to be no reason, therefore, why it should not be an equal success in Togo, for the soil and climate

are both favourable for its cultivation. A great number of plantations already exist. Cocoa does best in the western part of Togo, where perhaps the soil is more suitable for its growth than in the east. From Ho to Misahohe there are a number of farms, and in the Buem country large plantations are now owned by native farmers.

RUBBER AND COPRA.

Up to now practically no plantation rubber has been grown in Togoland, almost the whole of the rubber exported being the product of the wild plants. Native middlemen buy the rubber from the tappers and sell it to the European export firms. It is known from experience that in the years when prices rule high, the middlemen are extremely active and the collectors reveal corresponding energy; market prices influencing not only the value but also the quantity of the export. Most of the rubber comes from the Atakpame district, but although Togo rubber is of good quality, the colony is not a great rubber-producing country when compared with the results obtained in other countries in West Africa. A number of natives have been carefully instructed in planting and tapping trees, and, in fact, everything is done to prevent the unscientific and wasteful collection of rubber, which has caused so much damage to the trees in different parts of West Africa.

Special attention has been paid to the cultivation of cocoa-nuts in the colony, and every inducement has been given to the natives to further increase the

output. Although an enormous number of trees have been planted along the littoral, the Government have not encouraged Europeans to cultivate coconuts. The trees of course grow best in the moist, sandy soil on or near the coast line, and as the Togo littoral is extremely limited, and is mostly in the hands of native farmers, there would not be very much room for Europeans even if they took the matter up seriously and made extensive plantations. From Lome to Anecho there are thousands of small plantations, and apart from the picturesque scenery they form they are of considerable value as a commercial asset. About 8,000 nuts produced one ton of dry copra. The value of a ton of copra averages £20. One of the disadvantages in the cultivation of this product, however, is the length of time it takes to grow, the average being from ten to fifteen years before a tree bears fruit. Very little expenditure is necessary while the tree is growing, there being, as a rule, little or no bush to be cleared away on the sandy soil. The European planters have made the successful experiment of manuring the trees, and good results have been obtained. The Government endeavoured to induce the natives to do the same. Owing to the drought in 1912 the cocoa-nut harvest for that year was a failure, the farmers losing heavily. The lack of staple food caused by the drought during the first half of that year compelled the natives to buy up the nuts in large quantities for food.

The export of ivory is steadily going down. Indeed, within a few years there will be scarcely

any trade in it at all. Most of the ivory exported now comes from the Gold Coast, it being attracted to the colony on account of the good prices paid by the European firms in Lome. Unfortunately, there is no ordinance to protect the elephants from indiscriminate slaughter, the result being that even the young ones are killed by the natives.

FOODS FOR LOCAL CONSUMPTION.

Cassada is much cultivated by the aborigines for making various articles of food and for local trade purposes. It is grown practically all over the Protectorate, and is exported to the neighbouring colonies of the Gold Coast and Dahomey. Rice is grown and consumed by the natives locally, but is not exported. The African rice is excellent as a food, being rich and nutritious in quality. The rice trade is capable of enormous expansion, and even if the African rice is not popular in Europe, there is a large market for it in West Africa alone. Maize has suffered from bad planting, but model plantations have been established in Anecho, Lome and other districts, and the Government, which did much to forward its cultivation and export, were confident that it would grow into a valuable asset for the country.

The areas producing nutritious plants may be divided into the following five zones :—

(1) The coast district, which is productive of yams, maize, bananas, taro, manioc, sugar cane, and, above all, the oil palm. (2) The South Fetisch Mountains and the Buem region as far as Adeleland, where

maize, yam, and oil palms, bananas, rice, and Kebu peas flourish. (3) In the third zone, which comprises Central Togo, yams are the chief article of food, and maize begins to get scarce. (4) In North, Central and South Togo, durra becomes the principal article of food, but oil palms, yams, maize, and ground-nuts are obtainable. (5) In North Togo, beans and ground-nuts are plentiful. The harvest is generally stored in granaries and in houses which are constructed of wood, wicker-work and clay, the wood and wicker granaries being present everywhere in South Togo.

THE PEOPLE OF TOGOLAND.

THE people of Togoland appear to be divided into four zones or groups, but the lines of demarcation between them are less clearly defined than they were before the advent of Europeans into the country. The Mandigos came from the west and south-west, the Mossi and Gurma from the north, the Borgu and Dahome from the east, and, in the south, the two great groups composed of the Ewe, whose location east of the Volta extends to the neighbourhood of Lagos, and the Ashanti, who inhabit the west of the Volta and Oti and fall into several divisions. The Ewe language, which has been carefully studied, contains about 400 words, and is split up into numerous dialects. It is a very flexible and expressive language, and like all Sudan tongues, the signification of the words is expressed by the tone and pitch of the voice. Ewe is the commercial language of the country. The Dahome or Fong division of the Ewe group are found in Togo territory only in the provinces of Tado and the Atakpame. The Ashantis of the country are mostly found in the province of Apai, on the left bank of the Volta, but they occupy a number of scattered villages on the rand of the Togo Mountains in the direction of Bo. The Guang people, of whom the Kratschi are a branch, are situated between the Oti and Volta, and to the north of them are the several tribes of the Ngbangje, whose language is an admixture of the Tshi, Ewe and Adele. In

the north zone reside the Sudanese, who came from further north ; and the Mossi group, which extends as far as the northern end of the Gambagu plateau. The Mampulugu is a part of the Mossi group, which is neighboured in the Jendi district by the Dagbamba. To the east of the Dagbamba are races known as the Tim and the Gjamba, whose language is not unlike that of the Tshi and the Ewe. In addition to these greater groups there are many less important races, including the Risu, in North-West Togo ; the Moab, on the Gambagu plateau ; the Akposso, on the Akposso plateau ; and north-west and still further north of the Akposso, the Kebu and the Adele.

FORTIFIED NATIVE VILLAGES.

The Tschokossi savages in the extreme north of Togoland used to inhabit villages which can only be described as cunningly-constructed native fortresses, in which every hut was a fort, and although the necessity for these defensive precautions has ceased to exist, and even the Tschokossi has ceased to build them, a few scattered villages are still to be met with. The outer fortification is a palisade, five feet high, encircling the village, which is oval in shape. In the rim between the outer and the inner palisades of the same height, the huts are arranged at a distance of about two yards apart. Enclosed within this circlet of huts is a compound, common to the village. As the outer wall is protected by thorn bushes, the entrance to the rim in which the huts are situated is made from the compound, and this is

approached through an outer doorway leading into the biggest hut in the village. This hut, which is the common-room of the community, is divided into two parts ; in the one the women grind the corn and in the other the men gossip and take their ease. At night the men's department forms a stable for the sheep and goats. A door in the further wall of this communal-hut gives access to a courtyard, which is divided from an inner court by a wall which bisects the compound. From the inner court access is gained to the village by clambering over the wall. The circlet of huts is of the same height as the surrounding walls, and each is entered by a hole placed about two feet from the ground, and made just large enough to allow an adult native to squeeze through. But having pierced the outer wall of the hut, one is confronted with an inner wall, and in the narrow passage left between the two walls one makes a half circle of the building before arriving at a door which leads into the interior of the hut. The space between the huts in the rim between the double palisades is the communal chicken-run of the village. If this place was not impregnable against the assaults of men armed with bows and arrows, it would, at least, be impossible to rush it by a surprise visit. Even if the thorn bushes were surmounted and the rim was entered by the outer wall, the chickens would make sufficient commotion to warn the villagers of the presence of intruders, and by the time the assailants had squeezed themselves through the holes in the hut walls and crept round the inner passage of the

dwelling, the occupants would be ready to give them a warm reception. These ingenious and elaborate fortifications, the construction of which is said to have originated with the Gourma people, no longer form a part of Tschokossi defensive architecture, and although a few such villages are still inhabited, they are fast falling into ruin and being abandoned by the inhabitants.

ARTS, CRAFTS AND CUSTOMS.

Regarding the people of Togoland as a whole, they display the characteristics of the negro race with all the faults and merits of their kind, but like most of the inhabitants of West Sudan and Upper Guinea, they are industrious and persevering, and have extraordinary aptitude in acquiring civilisation. The Ewe and the natives of the Joruba and Atakpame are peacefully inclined and good tempered, and in them the commercial spirit is well developed, while such mountain races as the Akposso, Kebu, Atjuti, and Adele are powerful, warlike, and distrustful of strangers.

Among the arts practised by the Togo negroes, music and dancing play a leading part. The songs, which consist of solos and choruses, sung to the accompaniment of guitars, horns, flutes, and drums, are most varied among the Ewe and Ashanti people. The subjects of the songs range from philosophical views of life and death, to love, hunting and war, and in most cases are the expression of the personal sentiments of the singer. Dancing is accompanied

by much clapping of the hands, the arms and legs of the dancers being hung with rattles. Many of the solo and round-dances are a mere demonstration of high spirits, but others have a certain significance in which war and religion have a part.

Gambling, with cowrie shells for dice, is very popular. The universal game, which is played on a board, is called Dara by the Haussa tribes and Adi by the Ewe, and is quite harmless.

The rudiments of painting and the plastic arts are revealed in the figures, painted in red, black, white and yellow colours, which adorn the walls of some of the houses. Sculpture is limited to tone reliefs on the walls, in which the representations of crocodiles are most frequently encountered. Tattooing is popular, and is practised with skill. Many native methods for measuring time and counting are employed, the Ewe making use of sticks and matches and of grains of sand. The hours of the day are regulated by the position of the sun ; the time estimated to cover a certain distance is calculated upon the time required for a meal. The journey from one place to another is not recorded in miles but in meals. The week is generally composed of six days and the month of four weeks, and the twelve months of the year are arranged in accordance with the changes of the moon. Among the Ewe, the year begins in September with the sowing of the yams.

In the rearing of Togo children, the habit of obedience is conspicuous by its absence, but traits of filial affection are not wanting, and the old are held

in peculiar esteem. The young girls are instructed in household duties by their mothers, and the boys not only learn field work and handicrafts, but also the tribal and family customs and traditions, the ramification of relationship as well as certain principles of justice. Among the Ewe people it was formerly the practice to betroth a girl at her birth, and the bridegroom elect wooed his bride by cultivating the field for his prospective father-in-law and gathering in the harvest for him. If the girl—arrived at marriageable age—disapproves of her parents' selection in a husband for her, the unfortunate swain was bound by rule to take his life. In the coastal district brides are sought with cash in hand, but child-betrothal is still the custom with the Bassari, and bride-stealing is not unknown among the Adele. Weddings are celebrated with dancing and revels. As a tribe the Ewe is monogamous, but the well-to-do among them have two or three wives. The marriage tie can be dissolved at the instigation of either the man or the woman, but the children belong always to the husband, and even when a separated woman marries again, her children of the second marriage become the property of her first husband.

THE NATIVE AS LITIGANT.

For the negro the law has a peculiar fascination, and a lawsuit is the joy and aim of his life. The chief of the tribe is the supreme judge, and the sessions take place in the market under the shadow of the trees. Each party to the suit pays stated

fees, and briefs the most loquacious available man of the tribe to plead his cause. Lawsuits between single individuals are settled without much difficulty, but complications arise in cases between different tribes, when it is sometimes a matter of might *versus* right, when the injured parties have redressed their wrongs by seizing members of another tribe and seek to justify their strategy in the eyes of the judge. A decided feeling for justice generally prevails, but when the suit is brought against a guileless stranger, the most methodical illegalities are pursued with glaring unscrupulousness. In certain cases in which the judge lacks the courage to pronounce judgment against a powerful party, an appeal is made to the fetish priest, who is thus often in a position to favour a litigant, and the weaker party finds it anything but easy to obtain judgment.

Stealing is infrequent among the tribes, and is very severely dealt with. Murder is punishable by death, the murderer being despatched by the same means or weapons with which the crime was committed ; but again, if the criminal is a person of importance, he evades the extreme penalty by payment of a sum of money. Poisoning and witchcraft are punished without mercy, and vendetta was, until recently, universally practised.

The right of succession is somewhat complicated. Among the Ewe, the inheritor is the eldest son of the eldest sister of the deceased, and the landed property and wives of the dead man are divided among the other sons. The eldest son enjoys various privileges.

. . .

He alone can cut down the oil palms for the preparation of the palm wine, and the proceeds of the sale of the palm wine belong to him. Illness is attributable either to witchcraft or the influence of evil spirits, and the natives seek to exorcise it by medicines or the offices of the priests. After death among the Ewe people, the corpse is decorated, and a festival takes place, during which dancing, drinking and drum-beating is indulged in, lasting from eight to twenty-one days. The corpse is wrapped in matting and buried at a depth of two feet. Clothes and cowrie shells are buried at the same time, in order that the corpse obtain food and pay the ferryman who will convey him across the river to the kingdom of the dead. As the time of the departure to this last haven appears to be uncertain, food and palm wine are annually placed beside the graves for the use of the dead. Widows wear a mourning garment of dark blue cloth, and are compelled by custom to confine themselves to their homes for a period of from six weeks to six months following the death of their husbands.

THE HEALTH OF THE NATIVES.

Speaking of the Togo natives generally, they may be said to take more care of their health than the average African negro. Most of the tribes bathe freely and treat their skins with a preparation of fat, while, in common with all negro races, they take especial pride in their teeth. Yet infant mortality is very great, and although in individual cases the age

of seventy or eighty years is reached, the average length of life is not more than fifty years. Malaria is the chief sickness everywhere, even in the mountains. In the rainy season, and at the transition of the dry season, it is at its worst, the dry months being more or less immune from the scourge. Dysentery is an epidemic, and in Tapa, Buem and Gbele, a large number of persons die annually from the sleeping sickness. Yellow fever is not unknown, leprosy claims many victims, and skin diseases, especially eczema and ringworm, are common. The otherwise healthy mountain districts are visited by rheumatism and tuberculosis, and goitre is prevalent throughout the country.

Small-pox, which used to be a scourge in the country, is yielding before the advance of European preventive measures. Although at first the natives were suspicious about the treatment, as soon as the results became known they used to come in from the outlying districts and ask to be vaccinated. The Colonial Government found it useful to enlist the co-operation of the paramount chiefs, who made a law by which a certain number of the natives under their jurisdiction had to present themselves at the station for vaccination. There were 8,288 natives vaccinated in the Lome town district in 1912. In the Lome district itself 12,326 vaccinations took place, of which 4,742 were unsuccessful, the percentage of successful vaccinations being—Lome town, 55½ per cent. ; Lome district, 29 per cent. In the Bassari and Sokode countries of the Sokode

district, where small-pox was prevalent, 26,134 vaccinations took place in the year 1912. Throughout Togo vaccination has been carried on with energy, 95 per cent. being successful. From 1903-10, 123,276 vaccinations took place; but it is stated that not much reliance can be placed upon the work carried out by some of the native vaccinators. After vaccination immunity exists for about four years. The epidemic of 1911, said to be one of the worst that has occurred in the country, accounted for some 4,500 deaths.

The most popular native handicraft in Togoland is pottery, which is carried on everywhere by the women, who are all experts in the use of the potter's wheel. Indeed, no other native industry has been so little influenced by intercourse with Europeans. The material employed in straw plaiting and basket making are grass and reeds and the inner bark of the palms, especially of the Pandanus, Raphia and Borassus, but the bark of the Sanservia and Ananas are also used. Straw-plaiting, which is made up into roofing, fencing, pouches, satchels, hats, and baskets, is a small local industry, but the celebrated, gaily-patterned mats of Tschaudjo form an article of commerce. Rope-work is principally confined to Agotime; wood-carving on spoons, combs, vessels, and furniture, is practised in the Volta region; ivory-carving is carried on in South Togo at Kpandu, Gbele, Gbi, and Muatja, and great drum and fetish idols are produced in Ahinkru.

PALM WINE, IRON AND SALT.

A considerable trade is done in palm wine, which is produced in Central and North Togo from the oil palm as well as from the raphia palm, and is sold in large quantities to the caravans which traverse the arid districts of South Togo. Millet beer is also manufactured in Central and North Togo. Soap is made in South Togo from banana ash and palm oil, and in the north district from schi butter. The native-made leather from the skins of wild and domestic animals is a crude material, the good leather, employed in the manufacture of saddles, bridles, shoes, satchels, and hats, is obtained from the Hausa countries or made by the Haussas in Togoland. Cotton is made up in yarns and fabrics. Spinning is a work committed to the women; the weaving is done by men, chiefly by Mohammedans located in North Togo. The art of dyeing is followed all over Togoland, red dye being produced from cam wood and black with charcoal, while the blue, which, on account of its durability, is regarded by the Ewe people as the symbol of eternity, is obtained by the use of a preparation of native indigo.

The native iron is produced in considerable quantities from red iron ore in Benjali. The furnaces, which are $3\frac{1}{2}$ m. high, are stoked with charcoal, and after burning for five or six days, they yield a dirty but weldable iron from 25 to 30 kg. in weight. This iron, without being submitted to any process of cleansing, is used by the smith, whose

method among the Ewe people is a family secret that may not be divulged to strangers.

Salt is an important trade in Togoland, both coast and desert salt being in strong demand. The desert salt comes from a district extending from Timbuctoo in West Sudan to Kabure land. The coast salt is obtainable from the soil of the lagoons at Adda, at the mouth of the Volta, where the precipitation of the sea water is scraped from the lagoon soil and cleansed by washing, and at Great Popo, where the sea water is evaporated by artificial means. These two spots are situated at the mouths of navigable rivers, by means of which the salt can be forwarded far into the interior. So far back as 1860, Atakpame was a market for Adda salt, which was forwarded from that place on pack animals to Kpedji and Tschaudji. Monu salt, which is packed in cone-shaped wicker baskets, in parcels of twenty kilogrammes in weight, is forwarded by carriers to Sagada, Kete and Salaga.

NATIVE EDUCATION.

In order to ascertain the work done by Europeans, the Government and the Missionary Societies in schools for the natives of their various African possessions, the German Colonial Institute in 1911 sent out to the colonies over 2,000 printed *questionnaires*, with a request to the authorities to return answers according to the state of the schools on June 1st in that year. From the information filled in and returned, Herr Missions-Inspector Schlunk, of

Hamburg, was able to publish a voluminous report on the subject, and the state of affairs thus revealed is illustrative of the best and worst features of the Teutonic colonising system. The facts in themselves concerning the educational work accomplished in the way of providing the natives with schools and teachers are remarkable. In Togoland, the Wesleyan Missionary Society of London opened the first school in 1850. Since 1884, the North German Missionary Society, of Bremen, and the Roman Catholic Mission, of Steyl, have established elementary and higher schools, seminaries and industrial or artisan schools in the country. In 1891 the Government entered the educational arena, and although the number of their schools and teachers was limited as compared with those conducted by the missions, the efforts of the authorities in Togo and in Cameroon were directed to bringing all education under Government control.

In 1911 the Government had two elementary schools with two European and eight native teachers, and 337 pupils; the North German Mission had 141 elementary schools with seven European and 176 native teachers, and 5,414 pupils; and the Roman Catholic Mission had 166 elementary schools, twenty-three European and 200 native teachers, and 7,087 pupils. Altogether there were in the Colony of Togoland, 315 elementary schools, with eighteen male and fourteen female European teachers, 384 male and fifteen female native teachers, and 13,347 pupils; five higher schools, with three male European and four male native teachers, and 181 pupils;

four schools for practical work, with twelve male and two female European teachers, four male and one female native teachers, and 214 pupils. This gives a total of 324 schools, with forty-nine European and 408 native teachers, and 13,742 pupils, of whom 2,279 were girls.

In Cameroon the first educational work among the natives was begun by the London Baptist Mission in 1845, and in 1885, the year in which the Board of Foreign Missions of the Presbyterian Church in the United States of America entered the field, the London Baptists resigned their organisation to the Missions Gesellschaft, of Basel. Two years later the first Government School was opened in Duala, and in the following four years the Apostolic Vicariat Kamerun, of Limburg on the Lahn, and the German Baptists, of Steglitz, established schools in the colony. In Cameroon, as in Togo, the Government were behind the missions in the number of schools and scholars, having, in 1911, only eight elementary schools, as against the nine of the American Presbyterians, thirty-eight of the German Baptists, eighty-six of the Roman Catholic, and 275 of the Basel Mission. Altogether there were in the colony 499 elementary schools, with forty-two European and 611 native teachers, and 32,056 pupils; twenty-one higher schools, with thirty-three European and thirty native teachers, and 1,802 pupils; eleven industrial schools, with twenty-two European and five native teachers, and 259 pupils; or a total of 531 schools, with ninety-seven European and 646

native teachers, and 34,117 pupils. Of the teachers 3·3 per cent. and of the pupils 8·1 per cent. were females.

THE SCHOOL COURSE.

In both Togo and Cameroon, the course of the elementary schools began with an infant class and lasted four or five years, the objects of the schools in both colonies having been to provide Christian instruction to natives and to train pupils for the higher schools with a view to their entering the service of Europeans. Instruction in German began in the first year, and in the third year pupils were required to read and write German fluently in both characters. The curriculum for the last year included the history of the German Empire since the Franco-German War of 1870-71, the history of the German Emperors since January 18th, 1871, the Geography of Germany, and the singing of German patriotic songs.

In the higher schools, the object of the teachers was to "impart such knowledge as is required in the service of Europeans," and all instruction was given in the German language. The schools for practical work trained girls for domestic work, laundry work and farming, while boys received instruction in carpentering, cabinet-making, smiths' work, boot-making and tailoring, printing and book-binding. At the completion of their course, all pupils were obliged to remain in the service of the Government for two or more years. In both Togoland and

Cameroon, the Government had a school of agriculture, where pupils were instructed in farming, especially cotton-growing and the use of the plough, and at some of the mission schools in the latter colony the pupils were trained in brick-making and cocoa-planting, and the work connected with water-supply and bridge-making.

In both colonies the schools generally were open on five or six days a week, with from twenty to thirty-five hours' instruction per week, according to the grade of the several schools. The average length of holidays for Mission and Government schools was from two to three months per annum. Unfortunately, no statement of revenue or expenditure is included in the case of Togoland beyond the fact that the Government made a yearly grant of £750, distributed among the various schools for the encouragement of German language-study. In Cameroon, in 1910, the Basel Mission spent £5,386 on teachers' salaries, and the Roman Catholics £1,626. The cost of the Government schools in that year was £1,963. Generally no school fees were paid except in some of the higher schools in Togo, where pupils paid 50s. per annum, and at Garna, in Cameroon, the Government pupils paid 30s. per annum in kind.

THE RESULTS OF GERMAN METHODS.

TWO languages were used in all the schools of Togoland, the Ewe and German. Ewe is the language of the more enterprising tribes on the coast, but as many of the natives do not speak Ewe, it was necessary for them to be taught before instruction proper could be commenced. Although no force was employed to make children attend school, the attendance and discipline of the pupils appear to have given rise to no complaints. But it is stated that nearly all the pupils came to school in the hope that they would eventually find employment with Europeans ; that, at the end of their school course, the pupils considered themselves superior to manual labour, and that scarcely any of them returned to the family farms. The demands from the Government, the missions and traders for native workers is said to have exceeded the supply of trained pupils, but several complaints were made that this tendency, together with the universal instruction in German, threatened to become a calamity to the native tribes.

Miss Gehrts, who visited one of the German Government schools in Togoland, writes :—

“ What impressed me most during my stay in Sokode was the splendidly-appointed Government school, of which Mr. Kuepers is principal. He is assisted by several native teachers . . . and it is really wonderful to see . . . the rapid progress.”

Then follows a comment on the well-known

falling off at puberty, and an account of her own experience in questioning the scholars. She proceeds :—

“ These children are picked children. Only a certain number are taken from each village, and not above a certain number. At present there is accommodation for about one hundred ; but new buildings are being erected ; then the classes will be very largely augmented. The children are taken entire charge of by the Government during the time they are at school. A small daily sum is allowed each child for food and lodging, this being handed over *pro rata* to certain approved native women living in the village, who undertake in return to board and sleep so many of them. Each child is also given by the Government a little blue smock ; and books, slates, pencils, and so forth are of course provided free.”

In Cameroon a Government Proclamation of April 25th, 1910, made school attendance obligatory for all native children, instruction in German from the first class was made law, and the punishment for a child who left school before completing the whole course was fixed at a fine of £2 10s. or a flogging. Although children generally were anxious to attend school in order to qualify for service with Europeans, truantry appears to have become more popular after obligatory attendance was introduced, and the native police were kept busy in bringing back absentees. School children, who were distinguished by the wearing of brass-buttons and cockades,

showed a tendency to become denationalised: few of them returned to the family farms when they completed their school course, which had the effect of causing them to lose touch with their own tribe and families.

It is impossible, after reading Herr Missions-Inspector Schlunk's report, to refuse admiration to the thoroughness of the German system of instituting these inquiries, or to the care with which the Germans lay themselves out to Teutonise their native subjects. Their organising ability, as revealed in their methods of imparting instruction to the natives and preparing their minds for the reception of *kultur*, is amazing, but as Hanns Vischer shows in his analysis of this informative publication, contributed to the *Journal of the African Society*, their method has its disadvantages. "Little love and scarcely any respect for the native," he comments, "are to be found among the various reports. No mention is ever made of the natives' national feeling. Natives are taught German history and the names of the German Emperors, and they can sing German patriotic songs. From every colony we hear that the boys who have been to school seldom or never return to their own surroundings, and although this is regretted, as being detrimental to the interests of a peasant community, no mention is made of the breaking-up of the native family and the inevitable harm which must follow. The importance of practical instruction is everywhere recommended to teach the native to work,

but no mention is made of the natives' own industry and love for work which might be developed."

THE CLIMATE.

The climate of Togo cannot be described as other than bad, and the littoral is probably worse than that part of West Africa to the north of the Gulf of Guinea. On the coast it is extremely damp, but the atmosphere becomes drier and cooler in the hinterland, and is probably more healthy, although the sanitary conditions are not so good. The general order of the seasons in the course of the year is as follows: The months from December to March are exceedingly dry, and in the north are practically rainless. The heat is excessive in spite of frequent sea winds in the south district. In the centre and north-east, dry and hot currents preponderate. In March and April, overcast conditions prevail, with strong tornadoes, and the temperature falls. On the coast, July to September are months of indescribable dryness, and the rains of October usually bring no depressions. Central Togo has its maximum of rain in September and October, and in the three succeeding months the vegetation withers under the intense heat, the soil is dried up, and fine dust is whirled about by the east winds. Dust, burnt grass and ash mingle with the vapour, the whole air becomes turbid and opaque, and through it the sun appears as a pale disc. Aledjo, situated on a plateau nearly 3,000 feet above the level of the sea, overlooking wide expanses of mountain and plain, is

probably destined to be the health resort for Europeans in the colony. Miss Gehrts says that so great is the force of contrast that, after living in the steaming cauldron of the lowlands, the air of Aledjo seems as pure and bracing as that of the Austrian Tyrol, although she admits that "if a European could be transported straight from such a climate to that which prevails in a dry season at Aledjo, he would probably laugh to scorn its claim to be entitled the Switzerland of Togo."

By reclaiming swamps, building good houses, and segregating the European residents as much as possible, the German administrators have done excellent work in Lome, but in spite of all measures taken by the authorities, the colony is not healthy for Europeans. There are plenty of mosquitoes along the coast, and many parts of the interior are swarmed with them. Blackwater-fever is not uncommon, and among the other serious diseases of the country are small-pox, leprosy, dysentery, sleeping-sickness, and malaria, the latter being probably the most prevalent disease. In Anecho, which is the most important town on the littoral next to Lome, new streets have been made, and a certain number of native houses situated near to European quarters have been demolished. It is nevertheless an unhealthy town, situated on a sandy, narrow strip of sea-beach, with a shallow, muddy lagoon on the other side. Nearly all the European houses are sandwiched in among the native huts, and mosquitoes abound in the town. It used to be the

capital of the country, until a disease, which was probably yellow fever, broke out one year and killed most of the Europeans in the place. Efforts have been made to prevent the spread of leprosy, but the segregation of lepers and suspected cases has not been altogether a success. In fact, the disease is spreading in the country. In the Tschamba and Sansuon countries of the Sokode district, and in the Bogo country in the Mangu district, leper stations have been built, but the medical authorities experience considerable difficulty in inducing the natives to enter and, when there, remain in the stations.

RAILWAYS AND ROADS.

The principal railway in the colony is the 120-mile line which runs north from Lome to Atakpame ; a second goes from Lome, a distance of eighty miles, to Palime, near the hill station of Misahohe ; while a third runs from Lome thirty miles along the coast to the former capital of Little Popo. Surveys have been made for the further extension of the Lome-Atakpame railway, which was eventually to have been connected with a place called Banjeli, where iron ore exists in large quantities. It was also the intention of the Government to commence the construction, during the present year, of another railway of sixty kms. for the purpose of tapping the rich oil country in the Anecho country. On the completion of this line Togoland, with its limited hinterland and its small coast line, would possess four excellent

railways, three of which are already working and paying.

Lome, the chief town and only port of entry in the country, is one of the most charming little towns in West Africa. Picturesquely surrounded by palm groves, it is neat and clean, and beautifully laid out, and the buildings are a credit to the West Coast. The pier at Lome was partly destroyed by the sea in May, 1911, and it remained unworkable for the greater part of the year. As this interfered with the discharging and landing of cargo, and practically cut off Togoland from the rest of the world, commerce was so seriously affected that the best and newest German hotel had to close, and up to October of last year it had not been re-opened. The pier, at a cost of £20,000, was repaired in a manner that made it stronger than before, but a projected longer pier, capable of discharging up to 1,000 tons per day, had not been commenced when war was declared.

THE ROADS AND THE ROAD BUILDERS.

A network of roads throughout the hinterland, which for cheapness and excellence of construction are, in the experience of the British Consul-General, unsurpassed anywhere in West Africa, act as feeders to the railway, and the whole of this development work was started only a little over a quarter of a century ago, with a working capital of £4,000. But if we examine this economy of rail and road construction, we find that it is largely effected at the expense of the protected native. German colonial

rule in Africa is cast in a sterner mould than British, and while the Government charges the natives only six marks a year for its protection, it contrives to get its full return for the blessing it bestows. The six shilling head-tax sounds an insignificant impost, but it becomes a more important figure when the native is unable to pay it, and, in consequence, has to put in twelve working days on the Government roads, railways, buildings, &c. Even this tax upon the native labourer would not be prohibitive if the work was to his hand, but in many cases the men of the outlying tribes have to make a long journey from their houses to the field of their operations and back again—a double journey, which they take in company with their wives and families. While the father of the family is working out his tax, he is given Government rations, but on the long journeys he has to provide food for himself and his *entourage*, and the outing, in addition to the expense, not infrequently involves considerable hardship and privation.

“No wonder,” writes Miss Gehrts in “A Camera Actress in the Wilds of Togoland,” “he resents the hated impost, and tries to evade it whenever possible; for the native is constitutionally incapable of looking ahead, and cannot be made to see that the work he is called upon to do is for his own benefit as much as, and even in a sense more so, than for that of his white masters.” Moreover, the Government officials have a habit of inspecting the native quarters, and of punishing the existence of dirt of

any kind with a fine of twenty marks. The fine in the great majority of cases is taken out in road labour, and the roads in consequence are kept in cheap and excellent repair. The fact that the European in German territory is entitled to give a native twenty-five lashes, while in British dominions the striking of a native involves a white man in a fine of £5, is another explanation of Mrs. Mary Gaunt's fancy that in some of the villages of the German hinterland "the people are not as light-heartedly happy as in English territory."

GERMANY AS COLONISER.

In the application of her colonising methods there is overwhelming evidence of the fact (which Lord Haldane so generously deplored without convincing his fellow-countrymen of the necessity of sharing his depression on the subject) that Germany, having come late into the colonial field, endeavoured by strict organisation, pedantic self-consciousness, honest effort and entire lack of understanding of the task she had set herself, to bring her over-seas Empire into line with Greater Britain in the shortest possible time. She attempted a short cut to world-power, while she could only bring to the work the experience and methods of a Grand Duchy. She strove to make good Germans of African natives without giving them opportunity or excuse to appreciate the virtues of German administration, or the time for them to develop a desire to become part and parcel of the fledgling empire. In a word, they

set themselves to secure the Germanisation of the subject races by force, instead of inspiring them with a desire to be worthy of the honour that was thrust upon them. It has taken England three centuries of patient toil and example to inoculate native India with the enthusiastic loyalty which has expressed itself in the contributions of tens of thousands of fighting men and millions of money which they have thrown into the Empire's struggle; while, at the end of thirty years of Teutonic domination, the natives of Togoland threw off their allegiance to the Fatherland in the first moment of hostilities, and welcomed the invasion of the French and English forces with tumultuous enthusiasm. "The surrenders of Togoland," says an editorial of the *Gold Coast Leader*, of September 12th last, "has given rise to outbursts of joy and thankfulness among natives throughout the colony. In the Central and Western Provinces women, dressed in white, their wrists and necks encircled with white beads, and their necks and chests rubbed with white chalk, for days on end paraded the streets singing and chanting songs of praise and thankfulness for the victory of our soldiers. The terrible doings of Germans in Togoland . . . have become matters of common knowledge . . . and instinctively our people have felt that the loss of Togoland by the Germans is a distinct gain to the cause of the progress of natives and their good government throughout British West Africa."

COMMERCIAL PROGRESS.

THE commercial progress of the colony and the position of its trade can be studied in the following brief summary of the most recent Consular Report of October, 1913 :—

In 1912 the budget was £151,792, made up as follows :—

	£
Tax	32,257
Customs	76,400
Other revenues	13,505
Pier and railway receipts ..	27,625
Miscellaneous	2,005

The following table shows the value of the imports and exports of Togo during the years 1911-12, together with the increase and decrease.

<i>Articles.</i>	IMPORTS.		<i>Increase or Decrease.</i>	
	1911. £	1912. £		£
Machinery	1,420	4,897	+	3,477
Wagons and cycles ..	4,416	7,866	+	3,450
Guns	6,987	7,944	+	957
Gunpowder	6,301	7,195	+	894
Gold coins	1,625	145	—	1,480
Silver coins	66,005	40,494	—	25,511
Rice	1,500	6,989	+	5,489
Empty bags and rope	3,828	8,440	+	4,612
Casks and furniture	8,873	12,967	+	4,094
Sugar, syrups and confectioneries ..	5,504	7,137	+	1,633

EXPORTS.

<i>Articles.</i>		1911.	1912.	<i>Increase or Decrease.</i>	
		£	£		£
Maize	.. ..	8,711	11,554	+	2,843
Cocoa	.. ..	8,700	12,151	+	3,451
Palm kernels	.. ..	178,932	168,978	—	9,954
Palm oil	.. ..	84,410	70,642	—	13,768
Cotton	.. ..	27,701	25,744	—	1,957
Rubber	.. ..	41,614	48,786	+	7,172
Ivory ..	.. ..	1,797	2,085	+	288
Silver coins	.. ..	67,226	96,638	+	29,412
Cassada	.. ..	4,452	7,408	+	2,956
Copra	.. ..	3,198	3,063	—	135
Cattle	.. ..	15,561	25,290	+	9,729
Sheep and goats	.. ..	5,165	5,185	+	20

NOTE.—It will be observed that the export of palm oil and kernels decreased in the year 1912. That was due to the drought and the ravages caused by small-pox which attacked the natives in the southern districts during the year.

The following table shows the imports and exports of Togo for the years 1909-12 :—

			<i>Imports.</i>				<i>Exports.</i>
			£				£
1909	..	..	561,764	..	..	368,602	
1910	..	..	573,306	..	..	361,106	
1911	..	..	481,001	..	..	465,677	
1912	..	..	571,391	..	..	497,945	

The information published in the last British Consular Report was written about a year before the declaration of hostilities, but while the conditions in Togoland have undergone a drastic change

since that date, the Consul's remarks on "Openings for British Trade" may be commended to all who are proposing to do business with that colony. The British goods that have hitherto been despatched to Togoland have been of superior quality, and consequently more expensive than those sent from Germany, with the result that the Teuton merchants have practically cornered the markets. In his insistence upon the fact that articles intended for sale to the natives must be cheap and showy, the Consul writes: "What does the average West African native in his present stage of development care for superior articles? He neither appreciates nor understands them. For example, take the case of sewing-machines. The British sewing-machine is, as a rule, of good and lasting quality, and a fair price has to be paid for it. On the other hand, the German machines, although they appear to be well turned out and look very splendid in the stores, are not of such good workmanship as the British, at least those sent to West Africa are not. Consequently the price is lower, and nine times out of ten it is the price that appeals to the native mind.

"A man wishing to purchase a sewing-machine considers first the price, and seeing a German article in a German store as good in appearance as the British, but considerably cheaper, immediately selects the former. But this does not only apply to sewing-machines, it is applicable to many other articles as well. The Germans, however, are unable

to compete with us in cotton goods, which are purchased in considerable quantities by the natives."

The principal imports consist of cotton goods, hardware, tobacco, haberdashery, kerosene oil, tinned provisions, biscuits, lamps, candles, salt, jams, tinware, bicycles, guns, gunpowder, copper, wine, fish, agricultural implements, enamelware, glassware, clocks, watches, perfumes, powder, patent medicines, cheap furniture, soaps, mineral-waters, sweet syrups, flour, baking-powder, basketware, carpets, wire rope, clothing, cotton yarn, dried fish, empty barrels, empty kernel bags, hats, caps, &c. Of these the British Consul considers that the best openings for British trade are in the following articles: Iron goods, cotton goods, enamelware, earthenware, haberdashery, sewing-machines, copper and brassware, cutlery, rice, biscuits, whisky and wines, soap, salt, cigarettes, lamps, lanterns, lead bars, iron sheets, coal-tar, timber, and pomade.

THE FAMOUS WIRELESS STATION.

It may be safely conjectured that when the news was received in England, early last August, that a British and French force had entered the country and reduced the extent of the German Colonial Empire by some thirty odd thousand square miles of territory, Togoland was no more than a name to the general public, and few people could even guess the reason for the haste which the Allies displayed in seizing this unimportant possession. But the English and French Governments knew that a few

miles north of Atakpame, at a place called Kamina, the Germans had just completed the installation of the greatest wireless station in the world outside Europe. Less than four years ago the little African bush village of Kamina was suddenly thrown into a whirl of commotion by the arrival of a corps of German surveyors and engineers, followed by some thousands of natives from every corner of the colony. This conglomeration of negroes, with their wives and children, was pressed into the Government service under the provisions of the Native Tax Act, and was set to work clearing the bush, building a light railway from railhead at Atakpame, cutting roads, erecting workshops and houses, and handling the hundreds of tons of material that were sent forward from the coast. The installation, which comprises a power-house, receiving and despatching rooms, stone houses for the officials, and nine steel towers varying in height from 250 to 400 feet, was pressed forward at top speed. Miss Gehrts, who was in Kamina in November, 1913, on her way up country, and returned there six months later, declares that the progress which had been made during her absence filled her with amazement. The stone houses were finished, and the great steel towers and the immense power station were only awaiting the installation of the dynamos and turbine which would bring Kamina in connection with Berlin, 3,450 miles distant. Even in April, 1914, messages could be received if not transmitted, and a typewritten broad-

sheet containing the news of Europe made its daily appearance on the breakfast table.

"I need hardly say," Miss Gehrts adds, "that it is not for such comparatively trivial purposes as these that this powerful installation has been erected in the heart of the wilderness. The wireless station at Kamina is intended to be the chief receiving and distributing centre for the whole of Africa ; so far as Germany is concerned. It will communicate with the similar but smaller wireless station in the Cameroons, and also with that at Windhoek, in German South-West Africa, as well as with Tabora, in German East Africa. Furthermore, it will in course of time constitute one of the principal links in the chain of wireless stations with which Germany, like Britain, is seeking to girdle the globe, connecting her East and West African possessions with German New Guinea, with Samoa, and with the German Protectorate at Kiao-Chau, in the Chinese province of Shantung."

In June, 1914, the final installations were completed, and it is quite possible that the announcement of the declaration of war was the last important message which the German operator at Kamina received from Berlin before the station passed into the possession of the Allies.

THE FUTURE OF TOGOLAND.

Dr. Paul Rohrbach, formerly Imperial Commissioner for German South-West Africa, and an official of much discernment, was not greatly impressed

with Togoland. Employing the qualified method of commendation which was once so popular in Western Australia, he can say no more for a good thing than that it is "not too bad." Its coastal trade is "hampered by the extreme difficulty of landing"; the rainfall is insufficient to force a tropical growth; oil palms are only fairly numerous; the soil is mostly poor; and the land is essentially that of the native and of native cultivation. To sum up he says that: "Togoland, from the first, has obtained the reputation of being our model colony, because it succeeded at an early date in paying its way, and no doubt it was spared sets-back by the wisdom of its administrators. In spite of all this we must not deceive ourselves and expect that a small colony that is not as richly endowed by nature as Kamerun and East Africa will make such important strides as those countries. It is therefore comprehensible that, should an opportunity arise, Togoland might be well handed over to a foreign power in exchange for a more satisfactory African possession—one nearer to our other Colonies."

The colony has now been handed over, but to which foreign power is not yet determined, and in spite of some deprecatory feeling upon the subject, its future is already being discussed. "No discussion can be entertained here," writes Mr. W. A. Crabtree in an article on "Togoland" in the *Journal of the African Society*, "as to the future administration, how and by whom it shall be carried on, even though the native community at the coast has been

taking full advantage of the present occasion to ventilate grievances under German rule. These effulgences have been appearing in the *Gold Coast Leader* for some time ; but no advantage would accrue from any attempt to comment upon them. Indeed, from a cursory examination of this local paper week by week, it is perfectly obvious that there are grievances also in the English dependencies. Under these circumstances it is impossible to form an impartial opinion ; we can only trust that any real case of hardship or injustice may soon be rectified by the proper authorities."

" The problems of the future for the development of these industries," Mr. Crabtree says in conclusion, " and a few minor ones which have not been detailed for reason of space, consist in the extension of railways across or through the mountain ridges they have now reached, and also in apportioning the work of cultivation between native ownership and European. Considerable native interests are involved, if the general trend of paragraphs in the *Gold Coast Leader* are in any way reliable, so that this latter question of native or European management may prove to be the most immediately pressing question of the two."



THE MARKET PLACE, LOME, SOUTH TOGO.



ON THE SHORE AT ANECHO, SOUTH TOGO.

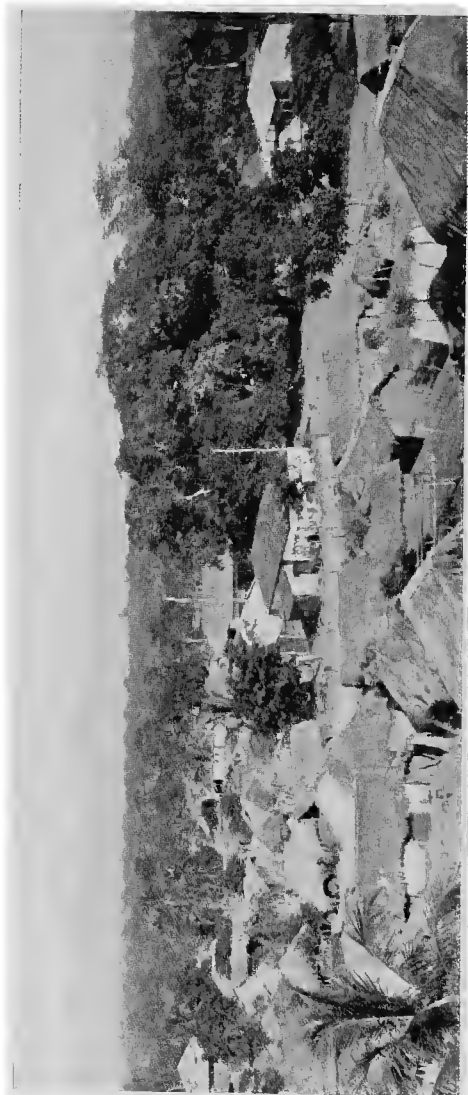


NOËPE STATION, SOUTH TOGO (LOME-PALIME RAILWAY).





MARKET DAY, ATAKPAME, SOUTH TOGO.



VIEW OF KPANDU, SOUTH TOGO.



GORGE OF THE KAME, IN THE SOUTHERN TOGO MOUNTAINS.



CURIOUS HIGH OVENS, USED BY THE NATIVES FOR SMELTING IRON ORE, AT BANGJELI,
NORTH TOGO.

THE CAMEROONS

DISCOVERY AND EXPLORATION.

THE large bay or estuary in the Gulf of Guinea, lying south of Nigeria and facing the island of Fernando-Po, was discovered by Portuguese navigators in the fifteenth or sixteenth century and christened the Rio dos Camaroes (the River of Prawns), from the abundance of crustacea that infested its waters. The name was also used to designate the neighbouring mountains, which rise to the north-west of the bay. The English usage, until the end of the nineteenth century, was to confine the term, the Cameroons, to the mountain range, and to speak of the estuary as the Cameroon River. It was left to the acquisitive Germans to extend the use of the name in its Teutonic form—Kamerun—to the whole Protectorate.

The establishment of German trading firms and factories at various places on the West African coast suggested to the Imperial Chancellor the practicability of laying the foundations of his projected German Colonial Empire in the Cameroon region of the Dark Continent. On March 19th, 1884, Dr. Nachtigal, a former Consul at Tunis, was instructed to proceed on this civilising mission, and on July 5th and 6th he hoisted the German flag at Bayida and Lome, in Togoland. On the 10th of that month the English gunboat *Goshawk* entered the Cameroon

River, and the mission's hope of further extending the sphere of German influence on the coast of West Africa appeared doomed to extinction. But the *Goshawk* departed on the following day, leaving the field clear for Nachtigal, who rushed through some agreements with the chiefs Deido, Bell and Akva, declared the country to be under the protection of Germany on July 14th, and appointed Doctor Buchner Provisional Governor of the newly acquired territory. The new Governor acknowledged the protest against German occupation, which was formally made by the British Consul on July 19th, and proceeded to hoist the German flag at Bumbia, Maliba, and Batanga.

In this nefarious and undignified manner the German Government obtained a foothold in the Gulf of Guinea, but it still remained for them to regulate their intrusion among the nations already established in the region. In order to solidify the position they had taken up, and, in the phrase employed by Siegfried Passarge, "to withstand the intrigues and provocations of the English," who laid claims to Victoria and the Rio del Rey coast, it was necessary to have the treaty of occupation confirmed. On May 7th, 1885, a treaty was concluded by which the British waived their claims in favour of Germany, who reciprocated by renouncing their nominal claims to Forcados, at the mouth of the Niger, and to St. Lucia. In the same year the French ceded Great Batanga and the island west of Kwakwa-Kriek in exchange for the German possession of Konakry.



VICTORIA, CAMEROON.

These treaties legalised the position, and Germany was left a free hand to develop her possessions in the Cameroons, under the Governorship of Baron von Goden.

In July, 1911, the German cruiser *Panther* appeared off the coast of Morocco, at Agadir, for the alleged purpose of protecting German interests, of which no trace existed in that quarter of the globe. The incident was ultimately closed by the cession to Germany of the French territory to the south of their Cameroon colony, which was subsequently incorporated with it under the name of New Cameroon. The transfer was made in June, 1913. Under French domination, three military stations, garrisoned with a total force of four officers, twelve non-commissioned officers, and 200 native troops, had been sufficient to preserve order, but the new rulers had their own ideas as to the military requirements of their growing Empire. We read in *Jahrbuch über die Deutscher Kolonien* (1913) that the German defence force numbers 185 Europeans and 1,550 natives, while it was the intention of the Government to form an additional corps of mounted infantry, to establish a stud farm for the breeding of troop horses, and to arm all the troops with 98·3 carbines. Since the declaration of war in August last, Togoland has capitulated to the French and British, and the German Cameroons are now being systematically and successfully invaded by the allied forces. The political future of these territories is, as yet, undetermined, but however they may be ultimately allocated,

German domination in West Africa, with its blundering mismanagement and bumptious militarism, is a chapter of colonial history that is closed for ever.

THE EXPLORATION OF THE INTERIOR.

Although the commercial activities of the tribes inhabiting the African Mohammedan empires, and the construction of trade routes connecting Senegal with the Red Sea, had opened up the Soudan to Europeans, the territory which since 1884 has been known as German Cameroon was practically unexplored at the beginning of the nineteenth century. In 1822 an English expedition succeeded in reaching Lake Tchad and exploring its western and southern boundaries. This discovery was supplemented in 1851-52 by Barth and Overweg. Barth went from Kuka to Yola, and discovered the upper course of the Benue. He penetrated further, through the country south of Lake Chad to Bagirmi. In 1854 Baikie went up the Benue, as far as Djen, about fifty kilometres from Yola. Rohlf's journey in 1865-67 and Nachtigal's in 1869-74 are of little importance. In 1879 began the activity of Edward Flegel, who, on the steamer *Henry Benn*, navigated the Benue as far as Garna. Of much greater importance are the journeyings in the Benue district in 1882 and 1883, the southern limit of which was marked by the towns of Ngaumdere, Banjo, Gaschaka, and Takum.

The knowledge of the coastal district was extremely limited. Burton and Mann had ascended the Cameroon mountains in 1861-62. In 1872-75

three German scientists, Buchholz, Reichenow and Lüders, made important zoological discoveries, while Rogozinsky, a Pole, in 1883, reached as far as Lake Barombi. But all efforts to penetrate into the interior were frustrated by the impracticable condition of the roads, the unhealthiness of the coast district—which was for the greater part uninhabited virgin forest—and by the hostile attitude of the natives.

After many fruitless endeavours to penetrate this coastal region, an expedition in 1888 succeeded in crossing from Batanga by way of Njong and Sanaga, and in settling the boundary between Bantio and Sudannegern. The effort to reach the Cameroon estuary was frustrated by the opposition of the Bakoko ; and after a journey of much difficulty the expedition returned to the coast. In 1899 a station was established and a foothold secured. In the same year the region north of Duala was explored, and the forest district traversed, the plateau of Baliland was ascended, and the grassy lands reached. With indescribable difficulty the districts from Ibi on the Benue to Yola were penetrated. In 1902-4 an Anglo-German expedition, after a very minute survey, fixed the boundary line between Yola and Lake Chad, and in 1908 an agreement was made between Germany and France regarding the south and east boundaries. In 1907-8 the frontier between Cameroon and the Nigerias was surveyed by the British and German representatives, and the approximate line of demarcation subsequently settled between the two

Governments was fixed and marked by an Anglo-German commission in 1912-13.

BOUNDARIES AND TOWNS.

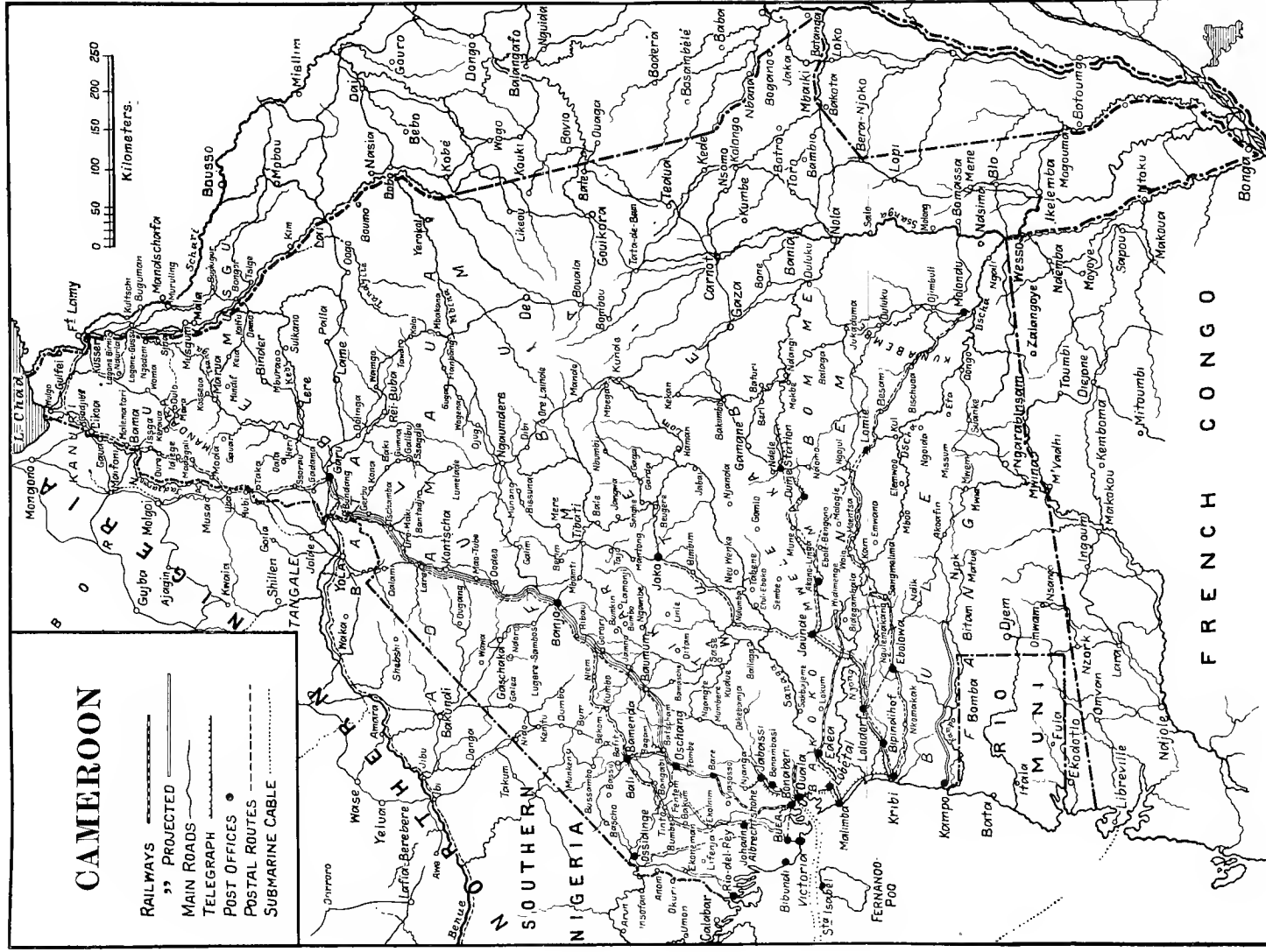
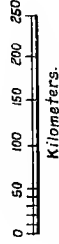
The Cameroons are bounded on the north-west by Nigeria, on the north-east and east by the French possessions of the Military Territory of Chad and the Middle Congo and the French possession of Gaboon. The frontier runs in a north-easterly direction from near Calabar in the Southern Provinces of Nigeria to Lake Chad, and then in a general south-south-east direction to about lat. 2° N., from whence it strikes south-west by west, reaching the Atlantic just south of Spanish Guinea, which is thus surrounded on the north, east and south by German territory. The general outline of the country thus described is broken in the middle east by a triangular piece of land which gives access to the Ubangi river, an affluent of the Congo, at Singa, in lat. $3^{\circ} 40'$ N.; whilst in the south-east corner a strip of land seventy miles broad runs southwards, giving access to the Congo itself in about lat. 1° S.

The Protectorate, with an area of 290 square miles, had in 1913 an estimated native population of 2,650,000, and a European population of 1,871, of whom 1,643 were Germans.

The chief towns on the coast, from north to south, are Victoria, Duala (the capital), Kribi, and Ukoko. Buea is a large town on the eastern slopes of the Cameroon mountain, and Edea is on the Sanaga, about forty miles from its mouth. In the moun-

CAMEROON

- RAILWAYS ———
- PROJECTED ———
- MAIN ROADS ———
- TELEGRAPH ———
- POSTAL OFFICES •
- POSTAL ROUTES - - - -
- SUBMARINE CABLE



tainous region in the north-west are Bare, Dschang, Bali, Bamenda, Wum, Esu, and Kentu; to the east of these is Fumban, and to the west, in the low-lying country near the Nigerian border, Ossidinge. In the western portion of the plateau are Tibati, Banyo and Tingere, and in the centre, at the junction of the main routes of the interior, is Ngaumdere. In the country north of the plateau the chief towns are Garua, an important trading centre on the Benue, Lere, Binder, Marua, Mora, Dikoa, and Kusseri. In the southern part of the country are Yaunde, Dume, Bertua, Gaza, Carnot, Bania, Lomie, and Akoafim. Molondu is in the extreme south-east.

THE PROGRESS OF THE PROTECTORATE.

In the twenty-eight years of their occupation the Germans had established courts of justice at Buea, Duala, Kribi, and Lomie, custom houses at Duala and Buea, thirty-eight post offices throughout the territory, and had maintained order among the natives by means of twelve companies of Imperial troops. They had constructed and opened 108 kilometres of the 1-m. gauge line of 160 kilometres from Duala to the Manengua Mountains, and had opened the central line from Duala to Widimange, on the Nyong River—a distance of 293 kilometres of 1-m. gauge line—as far as Edea, ninety kilometres from Duala. The imports had increased from 9,296,796 marks in 1898 to 29,317,514 marks in 1911, and their exports in the same period had risen from 4,601,620 to 21,250,883 marks, a total increase in the

trade of the colony of nearly thirty-seven million marks. The want of means of communication was found a hindrance in the economic development of the territory, which was admittedly possessed of "unlimited liabilities." Vast tracts in the interior were proved to be suited for cotton cultivation; oil palms, cocoa, and rubber were ascertained to be of "incalculable wealth," and the Cameroons were described by Dr. Grotewold as among the most productive countries in the world.

But the administration, or the critics of the administration of the Protectorate, had discovered that the lack of proper means of communication was not the only factor that retarded the progress of this richly endowed country. The unrest amongst the natives had revealed on the part of the authorities the lack of that sympathetic understanding of their native subjects which makes for successful colonisation. Their treatment of the natives was culpably injudicious, and their mistakes in dealing with them were so frequent and serious that the relations between the Government and the native population were constantly strained, and the services of the Imperial troops were in great demand.

GEOGRAPHICAL AND GEOLOGICAL FEATURES.

The country on the whole is mountainous and forms the north-west limit of the central African plateau. The coastland is flat alluvial country spreading out on either side of the Cameroon Mountains, and broken up with mangrove swamps, lagoons

and deep estuaries. The Rio del Rey region on the west of the Cameroon Mountains is a stretch of alluvial land with a breadth of thirty to forty kilometres, which forms the extreme eastern portion of the great alluvial plain extending from the Gold Coast to the Cameroon, and attaining its greatest development in the Niger Delta. Within the alluvial the volcanic massive of the Cameroon Mountain rises to a height of 4,070 m., and divides the land into two parts, which are connected only by a small and high strip of territory. To the east of the dividing mountain lies Dualaland. The other three orographical regions which comprise the Cameroon country includes the Cameroon plateau, which forms the largest and most important part of the colony; the enormous region of Adamana, which is generally level and nowhere reaches an elevation of more than 600 metres; and the extensive swampy lands of the Lake Chad basin which are under water during several months of the year.

The greater part of the colony is covered with red, loamy, sandy weatherings, which are characteristic of the tropics. If this red earth contains hard concretions of brown iron ore, they are named "Laterit." These cellular-like volcanic scoria are characteristic of the surface of the soil generally, and especially in those districts where the loamy deposits have been washed away by heavy rains. Vegetable soil is more abundant in the rainy regions of the south, and also in the lowlands. Indeed the result of this humid weathering is a kind of whitish yellowy kaolin, or

china clay, which is found in the south plateau. A blackish mould to a thickness of one or two feet covers the lowland south of Lake Chad, and is there called "Firki." Whilst in the south of the colony red and yellow clayey soil preponderates, the further north one goes to the dryer regions, reddish sand, a product of the physical weathering, is to be found.

CLIMATE.

In the coast region of the Cameroons the climate is warm and moist, with a high rainfall. The temperature is not excessively high, the heat being tempered by the cold Benguela current coming northward from the Polar regions. According to Knox (*The Climate of Africa*) February is the warmest month and July the coolest, the maximum and minimum temperatures being 89·7° F. and 66° F. respectively. The mean temperature at Victoria and Duala is about 77° F. The coast is one of the most unhealthy places in Africa, but the conditions are considerably better and more suited to Europeans in the high-lying districts in the north. The climate of the latter is largely of the continental type, characterised by extremes of temperature. At Bali the mean temperature is about 64° F., the maximum 87° to 90° F., and the minimum 43° to 45° F. At Fort Crampel, on the eastern side of the plateau, the maximum temperature reaches 113° F., and the minimum 49° F. On the Ngaumdere plateau it is sometimes very cold, and sleet storms are not

uncommon, the temperature sometimes falling to 37° F.

As regards rainfall, there are as a rule four more or less distinct seasons in the southern and central regions—the chief dry season at the beginning of the year, the so-called long wet season from June to September, a short dry season in October and November, and a short period of great rainfall in part of November and in December—but the divisions indicated are by no means well marked. The Adamana district, situated on the north of the plateau, lies beyond the equatorial belt, and there are consequently only two seasons, one wet and one dry.

The massive of the Cameroon Mountains presents a district which is singular with regard to its climate, vegetation and animal life. At its base is a primeval forest, and the climate is tropical and humid. Debundja and Bibundo have practically no dry season, the rain being continuous nearly the whole year round. On the east side, the rainy season lasts for only two to three months in the year. Buea, which lies on the lower slopes of the misty region, has a fresh, cool climate, and is quite free from malaria. The temperature varies frequently, in some cases from 15° to 2° Cent. in the course of two or three minutes. Instead of the usual heavy tropical rains, it has only a drizzling rain, and the humidity penetrates everywhere, even the dwellings. On the upper slopes, when the north-east wind blows, it is icy cold, except at midday. Hoar frost is

frequent and snow fairly so. The mountain is nearly always cloud-capped, and it is seldom possible to obtain a really clear view of the summit.

VEGETATION AND FORESTRY.

The combination of tropical heat and rain in the alternate regions of forests and brushwood swamps produces a tropical growth of cocoa palms, cotton plants, flax and fibrous trees, and rubber vines in prodigal luxuriance and variety. The virgin forests are tropical to a height of about 1,000 m., when they become less dense, and the oak ferns make their appearance. Between 1,500 and 1,800 m. the wild coffee shrub grows abundantly, the oak ferns disappear, and are succeeded by glades and brushwood. At an altitude of 2,200 m. the forest suddenly comes to an end and the grass land begins. Only in the ravines, in which the soil is moist and sheltered from the winds, the forest continues to the 2,700 m. level. The high forest—the most magnificent of all tropical forest formations—is characterised by its amazing variety of entirely different trees, including, among others, the great wool tree, the mahogany tree, the yellow and red wood trees, the oil-palm, and rubber. Among the trees of the brushwood districts the principal are acacias and the oil-palm, which to a height of from 700 to 900 m. covers the slopes of the Cameroon plateau to the coast.

The chief planting activity appears to have been at Johann-Albrechts-Höhe, and in the Dibombari district on the Northern Railway. A forestry

plantation at Manoka, near Duala, was abandoned on account of its remoteness, the difficulty of water supply, and the constant lack of labour. The principal work for the making of forest and state reserves has been conducted in Yabassi, Yaunde, Edea, and Dschang. The efforts of the forest department and of private persons have been concerned mainly with: (a) Investigations of woods suitable for beams, wharves, and for boat and waggon building; (b) trials of woods resistant to *teredo navalis* for small boats; and (c) experimental shipments to German South-West Africa of woods serviceable for building, mining and street paving.

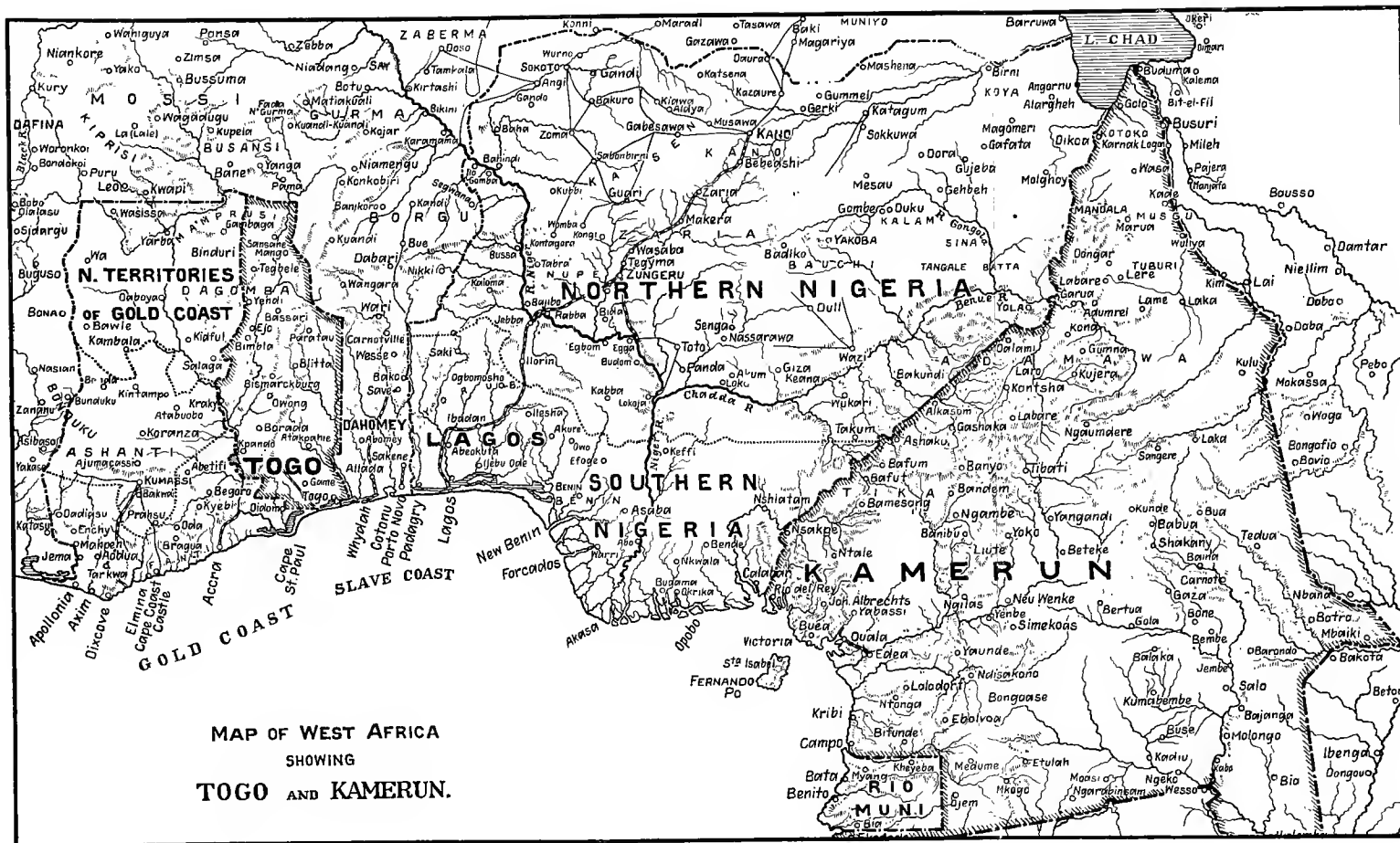
A large increase, amounting to 270 per cent. in the production of building and other timber, took place in 1911. The first place in the exports is held by Cameroons mahogany, which is stated to be increasing gradually in value in the market; its exports having risen in value from £7,022 in 1910 to £22,000 in 1912. The next wood in importance is Cameroons ebony, the exports of which have been as follows: 1909, 672 tons, worth £3,038; 1910, 1,221 tons, worth £6,090; 1911, 1,652 tons, worth £6,777; whilst in 1912 the value of the shipment was £9,055. The increase of exports has been largely due to an increase of cutting by the natives, and this has entailed a considerable amount of robbery by them. As a consequence, timber exploitation on Government lands was entirely prohibited to natives in the period 1912-13, and concessions were given to Europeans with much caution; a decrease in the production

was therefore expected. A difficulty regarding the exploitation of timber in the Cameroons is the lack of good waterways in the forest regions.

CATTLE RAISING.

In spite of the very great difficulties caused by the tsetse fly, much attention has been paid to stock-breeding in the Cameroons, although with the exception of certain efforts made in Kusseri, in the extreme north, and in Garua, in Adamana, nothing in the nature of methodical horse-breeding by natives exists. The indigenous cattle are of two kinds, the dwarf cattle and the humped cattle. Cattle-breeding in the proper sense is only found among the Fulla tribe in Adamana, in Banyo and the Lake Chad regions. From these places there was once an active export of cattle to the neighbouring British and French Protectorates, but this has been diminished in recent years owing to a large export duty. The interest in cattle-production on the part of the natives has been increased in recent years, under official encouragement, in the districts of Dschang and Bamenda.

The Fulla cattle are greatly prized in the central districts, in which, by reason of the ravages of the tsetse fly, no cattle can be bred, and when railway communication has cleared the infected regions, a thriving cattle export industry to the coast will be developed. The increased prosperity of the rubber districts of the south, especially Moloundou, Dume and Lomie, has led, in recent years, to a demand for



meat among the natives, and this has been supplied from the Hausa and Fulani herds. In 1911 about 20,000 head of large stock and 8,000 of small stock were sent from Adamana to the south, and this is estimated to mean an exchange between the north and the south to the value of about £150,000.

As is usual in West Africa, the natives possess neglected goats, sheep and fowls, and in some cases pigs, though this is only true to a very small extent in the southern districts.

NATIVE AGRICULTURAL PRODUCTION.

The chief agricultural products of the Cameroons are rubber, palm kernels, cocoa and palm oil, and the Protectorate may be said, in a general way, to present three chief agricultural areas: the southern, with rubber in increasing production; the middle province around the Cameroon river basin, with their plantations and areas rich in oil palms; and the grass country, northward, suited specially for cattle breeding. Nearly all the rubber exploited has been derived from the native exploitation of wild plants. Almost all the male population of Lomie, Moloundou, Dume, and Dengdeng was concerned in rubber collection in 1910-11, in which years more than 1,000 coloured middlemen bought the rubber from the natives and sold it to the forty-nine mercantile firms who had no fewer than 230 stations established for its purchase. The comparatively small share of rubber plantations in the whole production of the Protectorate is shown by the fact that, of a total

export of 5,957,516 lbs. in 1911, all except 23,912 lbs. was from wild plants; whilst in 1912 cultivated plants accounted for only 53,040 lbs. in a total shipment of 6,184,222 lbs. The results of the attempts to induce the natives to take up new cultivations depend on the presence or absence in their district of wild plants that they can exploit. Whilst, for example, the inhabitants of the Lomie district, who still know of rich stands of wild rubber plants, are hardly to be excited to commence rubber cultivation, it has been experienced in Kribi, where these do not exist, that the distribution of young plants are gratefully received and readily planted.

It is also recorded that oil-palm cultivation has been introduced with some success to the natives, in the districts of Lomie and Yaunde, but any "cultivation" by the natives is very simple in nature, consisting merely in the keeping of the stands clear of "bush." The large decrease in the exports of ivory in recent years is due in great measure to the exhaustion of the stores of ivory hoarded by the natives and the extent of elephant shooting in the past ten years. The exports in 1910 amounted to sixteen tons, valued at £124, and although there was a slight increase of quantity in the following year, the export in 1912 showed a large diminution. The other native products are chiefly djair nuts, shea nuts, kola, and gum arabic, but there has been comparatively little activity as regards the actual cultivation of crops, because of the natural richness of the country in products which enable the inhabitants to

buy what they require. The raising of food crops exists, however, for special demands, such as arise near railways, administrative stations and larger towns, and the chief places on the caravan routes and rivers. Near such places the native raises maize, plantains, bananas, cassava, sweet potatoes and ground nuts, as well as sorghum (*dura* or *dari*) in the northern districts, and some kola and sesame in isolated places. In several districts a certain amount of tobacco is planted ; there is also some little fruit raising, notably in the villages of Ambam. In the highlands of Dschang, and in other places, such as Ebelowe and Yaunde, new crops, such as the English potato, " black bush " beans and turnips, for which the climate seems to be suited, have been introduced. Numerous inhabitants of the districts of Duala and Edea have in recent years laid out farms for the raising of cassava, plantains, maize, yams, and other products.

North of the watershed the principal crops are guinea-corn, millet, ground-nuts, cassava, and sweet potatoes ; cotton and tobacco are also cultivated by the Chamba pagans, Zumperis and Munchis. The corn is planted in April at the end of the rainy season, the method of cultivation being as follows. The ground is first cleared of weeds and the remains of the last year's crop. It is then prepared for sowing by digging shallow trenches with a rough kind of hoe, the earth being piled up to form ridges between the trenches. Guinea-corn (*Sorghum vulgare*), the staple food of the country, is planted in these ridges.

It grows to a great height, often fifteen to twenty feet, and is harvested in November. Millet is planted in the furrows ; it ripens rapidly and is harvested in July. Cotton is ready for picking after December ; tobacco and cassava are cultivated during the dry season on the hillsides, the streams being used for irrigation.

From October to March, during the dry season, the natives are engaged in stacking their corn into mud-walled granaries, and threshing what they require for immediate use. These months are also spent in repairing the damage done to the villages, grass being cut and tied into bundles for thatching roofs, and making new zana matting. The dry season is also the hunting season, when the long grass has been laid low by fire. This grass-burning is an annual institution, although the Government has given orders prohibiting it on account of the damage done to trees. But the hill tribes care very little for trees or grass, and a good deal for meat.

As in all parts where the tsetse fly prevails, and the employment of cattle for ploughing is impossible, the land is chiefly cultivated with the hoe ; and as the West African hoe is a tool which calls for the exercise of patience rather than skill or strength, the native leaves the field work to his women. From this form of servitude the women will not be emancipated until cattle are rendered immune from tsetse fly and the hoe is supplanted by the plough.

PLANTATION CULTIVATION.

THE Cameroons were regarded by the Germans as a plantation country of the highest promise, and the proximity of the Cameroon Mountain to the coast, facilitating the realisation of the products, render this part of the colony an ideal area for the planter. All the largest plantations are situated in this district, which has been extensively developed, and its products have already assumed considerable proportions in the export statistics of the dependency. The laying out of a plantation in Cameroon is by no means an easy task, as the fertile soil must be drawn from the primeval forest. And as the Cameroon primeval forest has no equal for vastness and impenetrability, laborious and costly preliminary work is necessary before any real planting can be attempted. On the whole it is very much the same as in East Africa, with the distinction that as a rule in the latter colony there is only the so-called bush to clear, while in Cameroon one has to deal with high-grown primeval forest.

The cultivation of cocoa prospers on the slopes of the Cameroon Mountain, where the climate and soil resemble those of the adjacent Islands of St. Thomas and Fernando-Po, and its cultivation is almost confined to the Cameroon Mountain and to some plantations in Sanaga and Kampo. It is to be hoped that with the further opening up of the country, many districts will be found suitable for its cultivation.

In this case the many years' experience on the Cameroon Mountain will facilitate the spreading. The cocoa-tree is, on an average, six to eight m. high, with a trunk diameter of about fifteen to twenty-five cm., and it begins to produce after four or five years. At harvest time the fruit must be carefully gathered, to avoid injuring the tree. The opening of the fruit to obtain the seeds is done with a cane, or by beating open the fruit on a stone. When the seeds are taken from the fruit, they undergo the important process of fermentation. It would take too long to relate the different methods employed, but it may be mentioned that the fermentation process affects the taste and aroma of the cocoa very much, drawing away the bitterness of the bean, modifying its sharp taste, and developing the aroma and the red-brown colour.

A still further proceeding is the drying of the beans, which is done either by the heat of the sun and the fresh air on threshing floors with removable roof, or by artificial heat in drying apparatus. Some days after the cocoa has been carefully dried, it is ready for exportation. It is packed in sacks or matting, and in the past it has been dispatched principally to Germany to be worked up in the factories. The kernels are ground and the grease when extracted is used in the form of cocoa-butter for medicinal purposes and for the fabrication of soap. The export of cocoa, which amounted to 2,450 tons in 1908, reached a total of 4,550 tons, valued at £212,500, in 1912.

RUBBER.

The attention of the rubber dealers was at first confined to certain lianas, especially the *Landolphia florida*, which was regarded as the greatest rubber-yielding plant in the colonies. But in the beginning of the century it was discovered that the great virgin forests of South Cameroon contained vast numbers of *Kickxia-elastica* trees, and that extensive subsidiary tracts covered with the same plant existed in the savannahs of South Adamana, in the Kumbo highlands, and the region of Lake Chad. *Kickxia-elastica*, known in the trade as "silk rubber," was first discovered on the West African Coast in Lagos in 1894, and by October of the following year the exports had reached well over a million pounds. The eagerness of the natives to exploit this very valuable product led to the total destruction of the rubber-yielding trees, with the result that by 1906 the export had entirely ceased. Dr. Schlechter introduced the *Kickxia* rubber trees from Lagos into the Cameroons, where he proved that $1\frac{1}{2}$ lbs. of dry rubber may be obtained from the six-year-old trees, a result which was more than confirmed subsequently by Dr. O. Warburg, the well-known authority on rubber. The first shipments of rubber from the *Kickxia* trees were obtained from the wild rubber trees known as *Funtumia-elastica*, and it has only been during the last few years that the Germans, realising that the *Kickxia* rubber trees are indigenous to the colony, have cultivated it, and there are now large plantations of

Kickxia in the Cameroons containing millions of trees, which are doing well.

From the tapping of wild *Funtumia* trees, it is known that this species yields latex more readily than others, and that it is almost as sensitive to drastic tapping as *Castilloa*. Tapping of the cultivated tree has occurred experimentally in Cameroon. These trees, however, do not stand closely-planted, but singly or in rows, and the results must be judged accordingly. It can be assumed that from 3 to $3\frac{3}{4}$ ozs. are to be expected from six-year-old trees planted at good distances from each other, and 1 to 2 ozs. from closely-planted trees. The method of tapping practised in the last experiments with *Funtumia* differed from all other methods, in that vertical incisions the whole length of the trunk were made. As to its advantage over the herring-bone system, further observations and a more extended series of comparative tapping trials are first necessary. The rubber is procured by boiling the latex after diluting it with water; treatment with hydrofluoric acid yields a better product. Although *Funtumia* *Castilloa*, still it may be confidently anticipated that with more suitable preparation it will yield a good serviceable product.

THE COST OF PRODUCTION.

Most of the *Kickxia* plantations are laid out on land which has been cleared of jungle, a process which does not entail a heavy outlay. The expenses, including all costs for inspection, tools, labour, &c.,

amount to about £10 per acre. A fair supply of native labour is available, and the average wage, including board, is about £10 per annum. The cost of the upkeep of the planted areas should not exceed 30s. per acre for the first year, 22s. 6d. per acre for the second year, and 18s. 6d. and 10s. for the third and fourth years respectively. The estimated inclusive cost of tapping the trees and delivering the produce in Europe should not exceed 1s. 3d. per lb. The value of Kickxia rubber, if properly prepared, is almost equal to that of the best Para rubber, and it is certainly safe to estimate that it will always fetch within 1s. of Para. These figures compare very favourably with those obtaining in other plantations, and they are given here as an indication that in its rubber exports alone the Cameroon territory has a profitable future before it.

In considering the question as to whether Germany will ever be in a position to supply her own demands in rubber from her own colonies, Dr. Paul Preuss, writing in the *India Rubber Journal*, says that it depends on three factors: (1) Soil, (2) Climate, (3) Labour. "Regarding soil," he says, "the Colonies of Cameroon and New Guinea alone possess several hundred thousand acres of land suited for the cultivation of the most valuable rubber trees. The climate there is also very favourable. Taking the annual requirements of Germany in rubber at 16,000 tons, this quantity can be produced from an area of 150,000 to 170,000 acres exclusively planted with Hevea, and from 200,000 to 250,000 acres under

cultivation with the various species already planted, but with *Hevea* predominating. Even if the demand for the raw material should considerably increase, the answer to this question would be an affirmative as regards soil and climate ; whether, however, with the accompanying development in the cultivation of cacao, cotton, cocoa-nut and oil-palms, &c., the necessary labour will be procurable for such an extension in rubber cultivation, the question cannot be answered." It has been stated that in the coming years, when the rubber plantations are ready for tapping, and the tobacco plantations are demanding the services of thousands of natives, the insufficiency of labour will prove a serious problem, and the importation of Chinese labour was submitted to the consideration of the German Government as a feasible solution.

RICE, COFFEE, COCOA, AND TOBACCO.

During recent years the cultivation of rice has received more attention, especially in the experimental gardens. The forest land inhabitants have also begun to lay out water and hill rice fields in great extent, and it is only a question of time for the Cameroons to become a rice producing country. But whether the negroes will ever be capable of carrying out the troublesome cultivation of water rice, with the necessary transplanting and careful watering, is regarded as doubtful.

One can depend with greater confidence on the exportation of maize and millet from the forest land

and the drier hinterland, as soon as means of transport are provided, as it has been found that the black can be entrusted with this cultivation. Rice, as well as maize and millet, and also bananas and pines, which grow in great quantities, would be, as native cultivation solely, open to question.

Regarding the cultivation of coffee, the greatest hopes were raised in the first years of occupation of the colony. The Cameroon Mountains resemble in every respect the island of San Thomé and Fernando-Po, where, in 1884, a flourishing coffee cultivation existed. Nothing was more natural than the expectation than that a fresh impetus would be given to coffee cultivation on the mainland, but these hopes were not fulfilled, and now scarcely any coffee plantations are to be found. Tea was planted in Buea by Deistel, and the tea-shrub developed splendidly.

Plantation cocoa has borne the preponderating share of the total exports of that product in recent years, the areas in bearing having increased as follows : 1909, 13,328 acres ; 1910, 15,290 acres ; 1911, 17,560 acres ; 1912, 20,438 acres. The large increase of exports in 1912 is attributed to the very favourable weather in that year. It is stated that more care, with artificial manuring, is wanted in the cultivation, and that the chief diseases and pests of cocoa, such as brown rot, "cockchafer grubs," and "bark bugs," are not under control. Nevertheless the future for cocoa is believed to be good.

Much was expected of tobacco planting, especially in Bibundi, where tobacco was planted at first, and

the quality was excellent, although the cultivation was proved to be too dear and too difficult on account of the dampness of the climate. In 1902 there was a deficit of 200,000 marks, and for some time the cultivation was discontinued. Attempts were made in 1911 to encourage tobacco planting in the German colonies by the guarantees of a definite price for quantities of at least 100 cwts. raised and prepared in those colonies. The planted area in plantations in the Cameroons increased from fifty acres in 1911 to 383 in 1912; 230 acres of the latter had yielded a crop. In view of the expensive nature of the cultivation, it was hoped that Cameroons' leaf for wrappers would gain a good market.

The planting of the Kola-nut was undertaken very energetically, and in 1904, 400 were planted in Garna, but with what result is unknown. The experimental cultivations in the gardens of Victoria have produced no palpable result. The trees flourished and bore fruit, but it was entirely consumed by worms. The natives, on the other hand, cultivate this tree in great extent in the forest land, and especially in the Kimbo highland. Among different plants, especially in the trial gardens, are the vanilla, pepper, nutmeg, cinnamon, and other spices. Vanilla was quite destroyed by blight in Victoria. Pepper, cloves and cinnamon all furnish excellent productions.

OIL AND COTTON.

Of oil-producing plants, the cocoa-nut palm, which is found locally and as far as the grass land in

Cameroon, is by no means important, and cannot compare with the oil-palm, which is widespread in the coastal districts. The plantation area of the oil-palm in bearing was reckoned in 1912 at 4,118 acres. The particular description of the palm oil and palm kernel industry and its future, which will be found in the division of this book entitled "Togoland," can be read in connection with the same industry in Cameroon, and for this reason it is unnecessary to treat of it here.

The cultivation of fibrous plants, which have made a highly satisfactory start in Togoland and East Africa, are to be found in Cameroon only in the preliminary stage. In the experimental garden, Sanseveria, the *Romelia-pita* from Central America, manilla hemp, *Musa textiles*, as well as the Uttari jute, have been planted.

Cotton should have a much greater future than the so-called fibrous plant. It is cultivated at present to a great extent south of Lake Chad by the natives, and the cultivation of cotton has been called systematic, as only one to two year-old plants are harvested. In that region the conditions are so favourable that a considerable development of the cotton cultivation may be counted upon, as soon as more favourable communication conditions are made. In the Benue Valley, cotton has also been cultivated for several decades. The whole of the forest and coastland are unfit for this cultivation, and it is somewhat surprising to hear that on the uncultivated lands of the Mandara Mountains, a very beautiful

long fibrous cotton grows. At the instigation of the Colonial Agricultural Committee, cotton cultivation made a tremendous start in Togo, and in East Africa as well as in the Cameroons.

The export of timber has increased by leaps and bounds in recent years. While in 1909 timber to the value of only £8,500 was imported, this sum in 1912 had risen to £35,000, and, with the extension of the railway system, the revenue from this source can be increased almost indefinitely.

EXPERIMENTAL AGRICULTURAL WORK.

Dr. Walter Busse, of the Imperial German Colonial Office, writing in the "Bulletin of the Imperial Institute" on "The Organisation of Experimental Work in Agriculture in the German Colonies," tells us that in Cameroon, as in other parts where land is being opened up for agriculture, the conditions of settlement of the natives, the density of the population, the general standard of civilisation, and the capacity of the natives for any particular kind of activity, all play an important role. "And in proportion as the people incline towards agriculture, so attention must be paid to the inclinations and needs of the separate races, and lastly to the extent, organisation and methods of native agriculture. . . . The German Colonial Government," the German colonial official proceeds to explain, "has laid it down as a principle that native agriculture in the tropical colonies should be allowed to develop freely side by side with plantations under European control,

wherever this does not interfere with higher interests. Local conditions will decide how far in each particular region this or that method of organising agriculture is to be preferred. But wherever climate, soil and condition of settlement do not admit of plantation culture, and a native population capable of production is present, the Government will, as a matter of course, encourage native agriculture as much as possible, and by this means create an improved economic position."

Unfortunately for the native, as Hanns Vischer points out in his article on "Native Education in German Africa," his national feeling, his own industry and aptitude for work, was entirely ignored by the Government, and "higher interests" frequently interfered to retard the development of native enterprise, while the Teutonic professors proved too determined, for the good of colonial agriculture, to transfer to it "the long-approved system of German agriculture, which rests on a strong scientific foundation, built on the results of exact investigation and methods." Germany started her experimental work as soon as she entered upon the occupation of colonies, with the establishment of gardens for raising imported economic plants, such as coffee, cocoa, rubber, &c., in the interest of plantation culture, and for the advancement of gardening and fruit production. When European planters commenced to take up agriculture on their own account, it was found that the experimental work of the botanical gardens was no longer adequate to the new

requirements. For this purpose, experimental work on a purely agricultural basis, and an effort to effect an improvement of native agriculture, became necessary. To meet these demands, institutes were established, and agricultural staffs were organised, and the measures taken in Togoland in 1900, for the introduction and extension of cotton cultivation became the standard for agricultural experimental work in the other tropical African colonies of Cameroon and East Africa.

THE DEPARTMENT OF AGRICULTURE.

The Experimental Institute of Agriculture in Victoria remained as the centre for the whole of the experimental work in Cameroon until the year 1911, when the Imperial Government created a Department of Agriculture at Buea to deal with all questions relating to organisation, while the Victoria Institution continued to undertake the technical and scientific investigations. At first the agricultural work was mainly devoted to assisting the planting industry in the Cameroon Mountains, but as the colony became opened up, fresh problems presented themselves. The reckless exploitation of the *Funtumia elastica* and *Landolphia* vines in the rubber forests led to the establishment of a special rubber inspectorate, and various arrangements were made for the development of all branches of native cultivation. Special small experimental gardens were created in the larger administrative stations of the interior and placed under the management of a European farmer

or gardener, to deal with the cultivation by natives of products suitable for export. Later, a cocoa inspectorate was established to organise native cocoa cultivation in districts in which European cocoa plantations did not and were not likely to exist, and an experimental station was founded in the Jaunde district to encourage the cultivation of such crops as ground-nuts, plantain and manioc, with a view to export. At Kuti and Pittoa two agricultural experimental stations were established, primarily for the cultivation of cotton, but other branches of agriculture, including stock-raising, were embraced in the programme of work at these stations. In 1913 the agricultural staff consisted of fourteen first-grade, seven second-grade and twenty-eight third-grade officers.

The Institute at Victoria comprised a botanic garden and botanical and chemical laboratories, and the work carried on there included the raising of tropical economic plants, experiments in plantation culture and manuring, &c. Since 1910 young natives were trained as plantation managers in the agricultural school attached to the institute. At the cattle-breeding stations at Buea, Dschang and Djuttitsa (in the Dschang district), and Jaunde, the breeding of Allgau bulls and cross-breeding experiments with Allgau bulls and the indigenous humped cows were carried on with the object of obtaining draught cattle for the several districts and supplying meat and dairy produce to the Europeans. At the Dschang School of Agriculture, young natives were instructed

in the use of the plough and in other rational methods of agriculture. At the Kuti station, in the Bamum district, and the Pittao station, in the Adamana district, the advancement of cotton cultivation is the primary study, but the programmes of work also include comparative cultivation experiments with indigenous cereals, pulses, root-crops, and fodder plants, the use of the plough, manuring and rotation experiments, cattle-breeding and cattle-keeping, and the training of native travelling instructors.

The Rubber Inspectorate established stations for rubber cultivation at Sangmalima (Ebolowa district), Akonolinga (Jaunde district), Dume (Dume district), and Djahposten (Lomie district), and the work comprised the distribution of *Funtumia* and *Hevea* plants to the natives, the superintendence of new plantations, the regeneration of the stocks of wild rubber which had become exhausted by careless exploitation, and the instruction of the natives in the tapping of rubber trees and the preparation and preservation of the rubber.

In order to deal adequately with the agricultural questions which arose locally in the various districts, most of the administrative stations possessed—apart from the established experimental gardens—agricultural officers whose duty it was to superintend local experimental fields and gardens. Such officers were employed, among other places, at Duala, Edea, Bara, Yoko, and Bamenda, the chief aim of the experimental gardens at these places being to develop the cultivation of export products, while experiments with

foreign economic plants, yielding produce suitable for export, were also conducted.

MINERAL RESOURCES.

The mining industry has not yet penetrated into the Cameroons, and the mineral deposits of the country are commercially improved. Cretaceous and Tertiary rocks occur in the coastal area and extend northward to the Nigerian border. Gneisses and schists of pre-Cambrian age, with intrusive granites, extend over wide areas in the hinterland, and volcanic rocks of supposed Tertiary age are very abundant. Pegmatites and quartz veins are associated with granite intrusions in the pre-Cambrian rocks. These carry tourmaline in the region north of Duala, as in the Dschang district. Quartz veins with small amounts of pyrite and arsenopyrite also occur.

Tinstone, which occurs in pegmatite veins in Nigeria, may be expected to be encountered in the Cameroons, but although prospecting has been carried on in various parts of the region bordering on Nigeria, in the hope of finding tinstone and wolframite, no results have been obtained. The only trace of gold yet discovered was an occurrence of spangles of gold of theoretical interest only, which was found in a dyke rock (a bostoorite) on the eastern boundary of the Ossidinge district.

Promising finds of mica have been made in the pegmatites of the Ossidinge and Kentu districts, and galena also occurs in the cretaceous sandstone in the Ossidinge district; but hitherto no argentiferous

lead-zinc ores comparable with those of Nigeria have been located.

Iron ores, some of which are manganiferous, are abundant in the country. Many of these are of the lateritic type, and furnish material for native smelting, as in other parts of Western Africa. In some localities, iron ore has been formed by the decomposition of basalt. Masses of red and brown ores of this type are found on hill-slopes in the neighbourhood of Bali and Bamenda. A sample of this ore was found to contain 42·25 per cent. of metallic iron, 0·35 of manganese, 0·17 of phosphorus, and 12·26 of silica. Richer ores of the magnetic type are found among the pro-Cambrian gneisses.

Limestones are scarce and of unserviceable quality, but clays and loams, suitable for brick-making, are abundant. Indications of the presence of petroleum in the neighbourhood of Duala were falsified by borings. Asphalt is said to occur at Ossidinge and Mamfe on the Cross River. A thin layer of coal yielding 48·3 per cent. of ash has been located at Mamfe. Salt springs exist in the Ossidinge district, and the yield of as much as from 5 to 8 per cent. of sodium-chloride from samples of brine, is believed to indicate that salt beds may be found beneath the surface in this district.

THE CAMEROON-NIGERIAN BOUNDARY.

THE country bordering on the Nigerian boundary from Yola to Obokum on the Cross River, a distance of 360 miles, and the peoples inhabiting the several districts it passes through, have been admirably dealt with by Captain W. V. Nugent, R.A. Captain Nugent, who had been a member of the Commission under Colonel Whitlock which surveyed this area between 1907 and 1909, was sent out in August, 1912, to mark the boundary between the Cameroon and the Nigerias along the line which had been previously settled approximately on the map at a conference between the British and German Governments. The British Commissioner and his assistants met Lieut. Detzner, the German Commissioner, on October 8th, 1912, and the work of demarcation continued without interruption for six months, during which time 116 pillars were placed in position. Both Commissioners wrote accounts of this Anglo-German Frontier Demarcation Expedition, but, while Lieut. Detzner's official article on the subject, published in *Deutsches Kolonialblatt* (1913) is a dull, pedantic and unsatisfactory document, the paper read by Captain Nugent before the Royal Geographical Society in March, 1914, is compact of information and extremely interesting, and it is from his descriptions that I have derived the following details and extracts.

The frontier line divides the mountains, torrential streams and sparsely-inhabited areas of the Cameroons

form the wide fertile plains, great navigable waterways and densely populated districts on the Nigerian side of the border. The fact that Benue River and its three great southern tributaries, the Teraba, Donga and Katsena Rivers, all rise on the plateaux of the Central Cameroon, and only become navigable for canoes upon entering Nigerian territory, explain the unequal distribution of man over the country; for, while the savage pagan tribes have withdrawn to the almost inaccessible hilltops, the more civilised agricultural and trading peoples have kept to the well-watered plains.

THE FULANI REGION.

The boundary line, which commences at Bayare, a three days' march from Yola, crosses the M'Bulo plain and follows the Upper M'Bulo river to its source in the Shebshi Mountains. "The plain," to quote from Captain Nugent's description, "is covered with thin bush, and dotted with villages, each with its surrounding patches of cultivation. The formation is brown laterite, the rocks containing occasional bands and lumps of ironstone." The lower slopes of the isolated granite hills, which rise above the general level, are covered with pagan villages. "The people inhabiting the plains on both sides of the boundary are Fulanis, subject to the Emirs of Yola and Nassarawa; but the tops of isolated mountains, and the narrow valleys between the long spurs jutting out from the Shebshi group, are inhabited by pagans, offshoots of the Chamba and

Dakka tribes. The habits and customs of the Fulanis are well known—they are by nature herdsmen, just as the Hausas are born traders and the pagans agriculturists. The country is rich in flocks and herds of cattle, sheep and goats. A large trade is also done in horses. The villages consist of round huts of sun-baked mud, with conical roofs thatched with dry grass. Sometimes, when the village is only intended to be temporary, the walls of the huts are made of zana matting, which is also used to enclose the compounds, or groups of huts inhabited by one family. Every village has its assembly place, generally under a large shady tree, where the headman and his advisers sit all day and smoke, while the slaves work in the fields or drive the cattle to pasture. Slave-dealing is still carried on in this country, advantage being taken of the proximity of the boundary, which makes it so easy to evade justice. . . . The work of marking the boundary was watched with the greatest interest by the Fulani population. The 'kings' of all the towns on the English side, and a good many from the German side, came to salute us, generally bringing a present of a fowl or a basket of limes. Each 'king' carries a long stick, surmounted by a brass crown, the emblem of his office under the Government. There are first, second and third class 'kings'; the size of the crown varies accordingly."

The line in crossing the Shebshi Mountains passes over the summit of Mount Dakka, upon which the boundary pillar is 5,388 feet above sea level. "The view from Dakka is magnificent. On all sides are

tumbled masses of mountain, much cut up by deep ravines and rocky gorges, through which the many headwaters of the M'Bulo and Kam rivers tear headlong to the plains. On the German side, Vogel Spitz rises amid innumerable peaks and valleys to a height of nearly 7,000 feet, overlooking some hundred square miles of still unknown country. The northern spurs, projecting into the Cameroons, enclose high tablelands, extraordinarily fertile and highly cultivated. . . The boundary crosses the plateau near the only practicable pass, the road being entirely on the German side, so that one result of the demarcation is to close the direct trade route between M'Bulo and Kam Valleys until a new pass is discovered. There are plenty of tracks over these mountains, but very few practicable for animals. A bull which costs £1 at Tibak, in the M'Bulo Valley, is worth £3 or £4 at Gankita, in the Kam Valley, the distance as the crow flies between these two places being no more than twelve miles."

THE SHEBSHI MOUNTAINEERS.

"The Shebshi Mountains are interesting from the fact that they would form the principal obstacle, a well-nigh insuperable one, to the construction of a direct line of railway from Calabar, or a point on the Cross River, *via* Takum and Bakundi, to Yola. Yola is one of the few important points in Nigeria which does not appear likely to be linked up with the coast by a railway for many years to come. The German railway from Duala to the north, if it ever does reach

Garua, will pass to the east of the Shebshis, where many obstacles, almost as formidable, will have to be overcome. . . .

“ The people inhabiting the Shebshi Mountains and their foothills are principally Chamba and Dakka pagans. They have many points in common with other hill pagans of Northern Nigeria and Adamawa. The effect of Mohammedan inroads upon these tribes is especially evident. They may be divided into two classes : firstly, those who are slaves and mingle freely with the Fulanis, their villages being in the plain ; and, secondly, those who hold themselves aloof on the hill-tops. The former have copied many things from the Fulanis, such as clothing, houses, &c.—almost everything, in fact, except their pastoral proclivities. The pagan will keep goats and fowls, but he will have nothing to do with horses and cattle.

“ It is with the hill-top pagans, however, that we are principally concerned, as nine-tenths of the whole boundary zone are inhabited by people of this denomination. The first sign of the lower stage of civilization is the absence of clothing. A tuft of grass is the national dress, and even this is often dispensed with.

“ The villages consist of little beehive-shaped huts of mud or grass, perched on apparently inaccessible heights, or cunningly hidden away in mazes of dense tropical vegetation. The inhabitants bear a great resemblance to monkeys, being small in stature, but extraordinarily active. The steepest and most difficult ascent over rocks and

ravines is to them as easy as a straight, broad, level road. In fact, I have often noticed that these pagans, made to carry a load on the level, are utterly at a loss. They only come down from their rocky fastnesses to cultivate their fields, or to make war on their neighbours. They are armed with bows and poisoned arrows, from which it is never safe for them to be parted, even when working in the fields. They are almost invariably at war with a neighbouring village, the probable reason being that some of their women have been carried off. No regular trade is indulged in, but they are very fond of salt, which they obtain from Hausa traders. A bag of salt which costs half-a-crown on the coast has a purchasing power of at least ten shillings in this country.

“Each village is an independent community under a chief. The inhabitants are entirely ignorant of the world beyond the next village to their own. The nominal chief of the village has not, as a rule, as much influence as the local ju-ju man or witch doctor, whose power over these extremely superstitious people is directly proportionate to his success in imposing upon their credulity. Any calamity, such as an epidemic of sickness or a sudden death, is always attributed to the evil eye, and some member of the community is at once suspected, and either killed or sold to passing Hausa traders. If a chief dies, the village always moves to another site. This partly accounts for the number of deserted villages and ruins found in the Shebshi Mountains.

“The Chambas are industrious agriculturists,

and keep large numbers of goats and fowls in their villages. The farms are generally at the foot of the hills. After the harvest the people brew large supplies of spirit from the grain, and get drunk for several days together. These orgies generally result in fighting among themselves. The principal industry, besides agriculture, is working in iron. They make their own farm implements, spear and arrow heads, and pipe-stems."

THE TERABA VALLEY.

From Dakka the boundary line follows the Kam for about a dozen miles, and then, leaving the river, it runs over a block of hills which form the fringe of a vast unknown tract of the Cameroon country. Here the hill-top villages are few, the inhabitants are wilder and more squalid than the Dakka natives, and the land is the haunt of the elephant, the lion, the bush-cow and the leopard. From these hills the boundary descends into the valley of the River Lumen, which runs for twenty or thirty miles under a dark arch of overhanging trees. The water of the Lumen is very cold, even in the heat of the day, and the sands of the river are full of iron. The line crosses the Lumen and mounts a high ridge, called Shina, to descend again into the vast plain of the River Teraba. Along the banks of the Teraba are numerous Hausa and Jukum villages, situated on important trade roads between Northern Nigeria and Cameroon, the principal trade being in rubber, kola nuts, sheep, and goats. There are no cattle, as many

kinds of biting fly, including the tsetse, have their breeding places in this area. As the Teraba is typical of all the great southern tributaries of the Benue, the following short description, which Captain Nugent gives of one of the upper reaches, will be read with interest :—

“ Fifteen miles above Karbabi the river bends sharply at right angles, forming noisy rapids. Above the rapids the bed is rocky with deep pools. Under the tall trees along the banks are open glades like an English beech wood, entirely free from undergrowth, the ground being carpeted with soft moss. There are the feeding-grounds of huge herds of hippopotami, who live in the pools in the daytime. The river is here 200 to 300 yards wide, with high banks ; the channel winds among huge boulders, forming a chain of pools, but leaving a narrow deep waterway among the larger rocks. The pools are like dark mirrors, silent and stagnant, yet bright and clear, reflecting the trees on the opposite bank in full detail. Wild geese and ibis fly overhead, whilst large alligators move about like torpedoes, with their noses out of the water, leaving long trails of bubbles on the surface.

“ There is no village within many miles of this place, and it was only with the greatest difficulty that we could obtain guides, as there are no tracks except those made by the larger game. The inhabitants of the pools were thoroughly startled at our approach. There seemed to be a sort of collusion between the different birds and beasts. The shriek-

ing ibis warned the alligators asleep on the rocks in the sun, they, in alarm, slid into the water and warned the river-horse that something was amiss ; the river-horse in his turn went pounding up-stream, under water, coming up to breathe at intervals behind the rocks and branches. The snorting was terrific. We estimated that there were between thirty and forty hippopotami in the largest pool. I have never seen a wilder-looking place ; it seemed to be alive with everything except humanity.

IN THE CANNIBAL COUNTRY.

“ The boundary after crossing the Gazuba River, a tributary of the Teraba, again ascends into an unexplored continuation of the Banjo highlands, and drops into the plain of the Donga Valley. The inhabitants here are a mixture of Jukums and Zumperis, but there are numerous settlements of Hausas, whose trade consists of smuggling rubber and kola nuts into Nigeria without paying the German tax. The pagans, who live in ‘ swallow-nest ’ villages on the heights, cultivate guinea-corn and root crops, while yams, cassava and sweet potatoes grow in abundance in the interstices between the huts. The boundary reaches the Donga, and after following the river for fifteen miles and crossing the plateau of the Wanya Mountains, reaches the plain of the Bamana Valley, in which oil palms are first encountered.

“ The country between the Gamana and Katsena Rivers is inhabited by Zumperi pagans, who are cannibals and live on hill-tops. They are of small

stature and of remarkably repulsive appearance. Every other man appeared to be suffering from goitre or elephantiasis—whether the legacy of cannibalism, or the effect of drinking infected water, it is difficult to say. The people are industrious, and besides corn, grow large quantities of cotton and tobacco on the hillsides. They breed dogs for eating purposes, and all the villages are full of yelping curs, covered with sores like their owners. In one village a large deposit of human skulls was seen. The villages are well built and surrounded by mud walls and ditches. Among the numerous 'ju-jus' found in the deserted huts was a grotesque mask, which was apparently kept to frighten the women. Any woman seeing it must die at once. When the community is short of meat, the local witch doctor puts on the mask and runs about the hills until he meets a likely looking victim, who is then killed and eaten. The Zumperis are great hunters, and have killed off nearly all the game in their country except leopards."

MUNCHI CIVILISATION.

From the Zumperi country the Commission traversed the undulating plain that connects it with the valley of the Katsena, the last of the three great tributaries of the Benue, and ascending this valley reached the Agara or Misa Munchis district. The branch of the large and powerful Munchi tribe which inhabits this area have preserved themselves from contamination with the neighbouring tribes, by whom they are greatly feared. The Munchis of the

plains, who are of good physique and very intelligent, are supposed to have come originally from a country called Para, somewhere north of Yola, and they still call themselves Para among themselves. Many of their customs are similar to the Zulus, with whom they have often been compared, and the majority of their laws are identical with those of Leviticus. Their villages are well built and clean, and the men are brave in war and industrious in peace. Their marriage customs, in addition to the payment of a dowry, include exchanges of sisters, daughters and sometimes wives. Polygamy is rife, and the value of a dowry varies from two cows in the case of a young girl, to one cow or less in the case of a widow or elderly woman.

“The Munchis are of striking appearance. Those near the boundary are poor and wear few clothes. They go in for extravagant hairdressing, the most popular coiffure being a shaven head with one or two balls of hair left growing. Others wear their hair in beaded strands, falling over the side of the face. The tribal markings are a number of raised tattoo marks, in the form of a crescent, on both sides of the temple. These are universal, and are compulsory for both sexes, but the marks disappear in old age. Other markings are tattooed stars and rings on the forehead, chest and back, but these are all optional. The two front teeth of the upper jaw are filed into V-shape.

“The Munchis are excellent farmers, and grow guinea-corn, yams, millet, beniseed, maize, and

ground-nuts in large quantities. They also cultivate cotton, from which they weave good cloth, dyeing it with indigo, which is grown round every compound. Each village has at least one public dye-pit. Tobacco is also grown, and is either used as snuff or smoked in large pipes with bowls of clay and stems of smelted brass.

They are clever workers in wood and iron, making chairs and stools, in the carving of which they display some art and much ingenuity. The iron ore found locally used to be smelted in large quantities, and the remains of old workings can be seen in many places, but trade iron bars are now more generally used : from these spears and arrow-heads, hoes, knives, and daggers are constructed. The small knives are curious in shape, the handles being iron loops, which fit over the palm of the hand. The hoes have broad, heavy blades, fitted with short, crooked wooden handles, and are most effective agricultural implements. The principal weapons of offence are bows and arrows, the arrows being poisoned with a compound of crushed and boiled strophanthus seeds, snakes' heads, and poisonous plants, &c., which when freshly made is very potent, the slightest scratch causing a man to die in agony in twenty minutes. The fumes from this poison, when it is being boiled, are very deadly, even in the open air. The mixing is always done by one of the numerous ju-ju men, who profess to have antidotes, both external and internal, but there is no authenticated case of a cure having been seen by any European up to date.

In every village there is a large war-drum, constructed from a hollowed-out log, over which is stretched a hide. The Munchis are expert in the use of these drums for signalling purposes, and messages are sent in code from village to village throughout their country with great rapidity and accuracy.

“ They are very fond of dances and plays, which, accompanied by songs, are held on the occasion of the death of a chief or the headman of a compound, also at births and marriages. These dances are often kept up for several days when the host is rich enough to supply the food and drink, the latter being an intoxicating liquid distilled from guinea-corn.

THE GRASS LAND REGION.

“ Leaving the Munchis’ country, the Commission came to the junction of the Amiri and Mahana Rivers—whose steep banks are lined with magnificent trees, from which hang long ribbon orchids over a series of deep clear pools full of large fish—in a region of open grass land. The road up the Amiri Valley passes through extensive yam fields and Olitti and Atcho villages, composed of roomy, massive houses in small stone-walled compounds, protected with loop-holed thorn palisades. Grass land is reached at a height of 4,000 feet, and the path after crossing five separate peaks of 2,000 feet reaches the main ridge about 5,000 feet above sea level. “ To the north and east, as far as the eye can see, stretches open grass land, with range upon range of blue mountains in the distance. Across the plain sweep parallel shining

rivers, disappearing through gaps in the hills to the north. To the south and west, the great forest-clad plain extends to the Cross River, whose valley forty miles away is marked by a long bank of clouds. All around is high tableland, cut up into small plateaux by numerous ravines, down which countless streams tear headlong to the plains."

Descending from the main plateau, which is covered with thick short grass and appears to be an ideal district for cattle raising, the Commission came to the first villages of the Anyangs, who are almost invariably at war with the grass land people. " Their villages are hidden away in the forest, and consist of long, low, rectangular mud houses with roofs of palm-leaves, on either side of a squalid street. The people are very poor, and live almost entirely on plantains, their farms being in small clearings, widely separated. Pigs are kept in large numbers in the villages. Further south, the people met with are Bokis, who extend to the Cross River. . . . The village boundaries, although in dense forest, are well known to the natives, who are extremely jealous of their rubber-collecting rights."

The geological structure of the boundary zone, taken as a whole, is said to present few features of interest. Traces of tin were found in some of the rivers flowing north from the watershed of the Cross River and Benue system, and nearly all the rivers crossed by the Commission contained traces of monazite. The occasional belts of forest along the streams in the open bush country, north of the water-

shed between the Benue and Cross River systems, are mostly full of vine rubber (*Landolphia*). The forest line to the south of the Benue-Cross River watershed extends without a break to the Cross River, and from there to the sea. The trees grow to a great height, and the whole forest abounds in ebony, mahogany and other valuable timbers. The rains in the boundary districts begin in March with a few violent tornadoes, which become more frequent and less violent until May, and from that month till September heavy rain falls almost every day. By the end of September the rivers are in full flood, and the low-lying country is under water. In October the steady rain ceases, and at the end of the month the dry season sets in.

NEW CAMEROON.

The region of New Cameroon which was added to the German territory under the Franco-German Agreement of November 4th, 1911, was represented as being swampy, depopulated, and devastated by sleeping sickness, and the Teuton acquisition was greeted with general derision. But a more thorough investigation of the possession has shown that it is not so bad as it was painted, and while there are tracts that hold out no promises of profitable development, there are districts in the New Cameroon which will handsomely repay exploitation. The German "frontier" expedition into the interior has published descriptions of a steppe region covered with tall grasses, bushes, and trees interspersed with grassy

plains. The country abounds with a variety of animals, including giraffes, antelopes, gazelles, buffaloes, zebras, rhinoceri, elephants, and apes, and the Lagone and its tributaries contain large quantities of fish. It is inhabited by the Lakka tribe, a very independent race of Sudan negroes, who live in villages and disclose many differences in languages, manners, and customs. Hunting and fishing are their secondary occupation, but their regular occupation is agriculture. Their well-tilled fields, fertilised with the ashes of burnt grass, produce millet, ground-nuts, tobacco, hemp, and cotton, and their greatest delicacies are dried fish and caterpillars. They possess a few horses and goats, and the women employ themselves in pottery and basket work when not engaged in agriculture. Herr Eltester says that the Pangwe tribe, inhabiting the Muni district, are distinguished by every conceivable bad quality. They are thieves, liars, and idlers, and are given to indolence. The men sit around in the villages and smoke, the boys lay traps for wild animals, and the women till the fields.

THE DIFFICULTIES OF DEVELOPMENT.

The greatest drawback to the systematic development of the Cameroons is the naturally bad means of communication as regards both roads and waterways. The country being largely of steppe-like formation, the rivers are frequently interrupted by rapids and waterfalls. The chief rivers, the Munga, Wuri, and Sanaga, are only navigable by steamers for a distance of seventy kilometres. Beyond this point, litter-

transport has to be employed, and as bearers can only carry loads of 60 to 70 lbs. for a distance of from twenty to twenty-five kilometres a day, and as the distance from Duala, the coast station, to Central Cameroon is a thirty days' journey, and to Lake Chad twenty days', few products, except ivory and rubber, can bear this expensive means of transport. The most important tasks before the Government which is entrusted with the future of the Cameroons is the amplification of the means of communication, the encouragement of native civilisation, the exploitation of the economic resources of the valuable hinterland, and the extension of the plantation system. The enormous physical difficulties in the way of railway construction must not be under-estimated. The country is covered with colossal tropical growths, which must be cleared, the plague of sleeping-sickness must be stamped out, and the dreaded tsetse fly banished. In such regions railway building is arduous and costly, but not until the rich regions hitherto unreached have been brought into communication with the coast, will the Cameroons begin to profit by its "unlimited possibilities."



VIEW OF VICTORIA, CAMEROON.



MAIN BUILDINGS OF THE BIBUNDI PLANTATION, CAMEROON.



VIEW OF BUEA, CAMEROON.



LOW-LYING COAST NEAR KRIBI, CAMEROON.



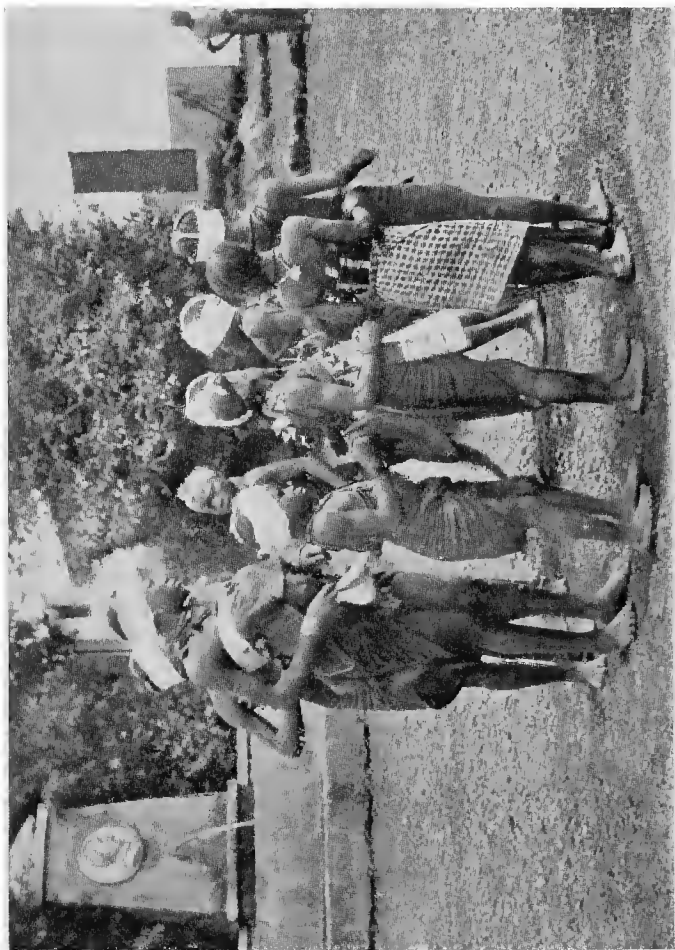
KRIBI, CAMEROON.



VIEW OF AMBAS BAY, CAMEROON.



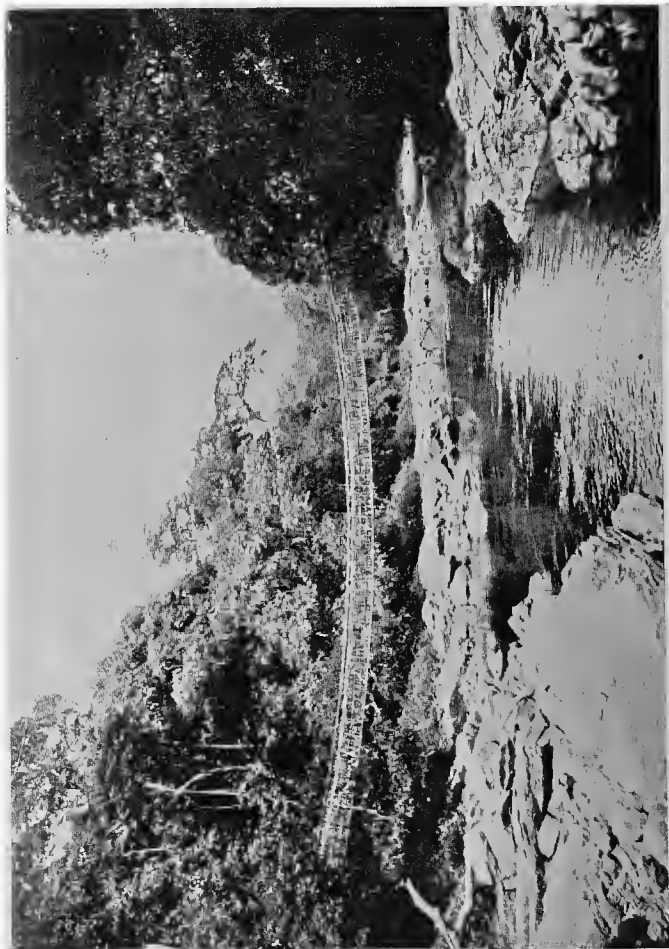
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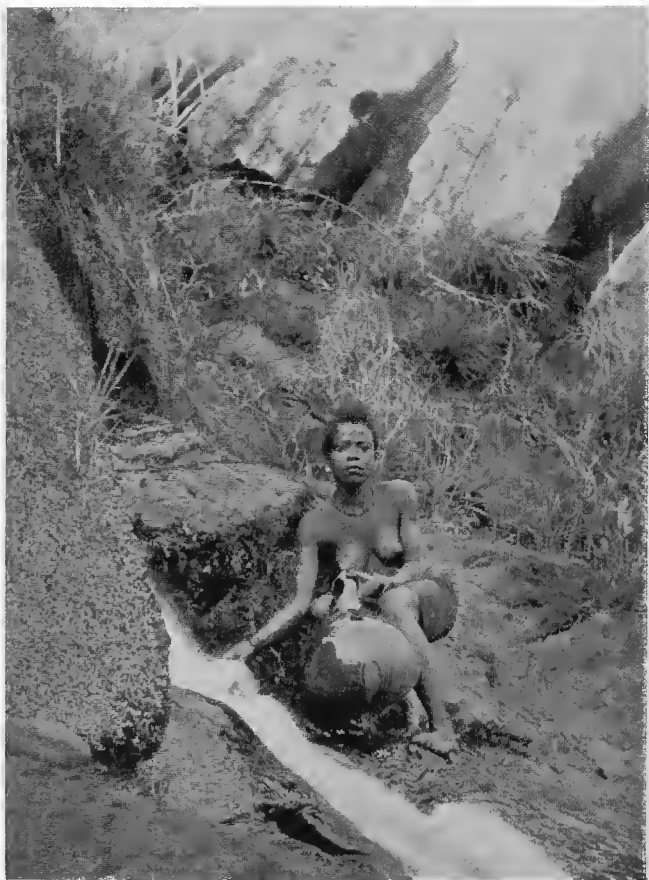
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